

**Technical Council
NIT Trichy**

Term Report

'23-'24



Technical Council's Report
Communities' Initiatives
Clubs' Annual Report
Pragyan 2024 Report

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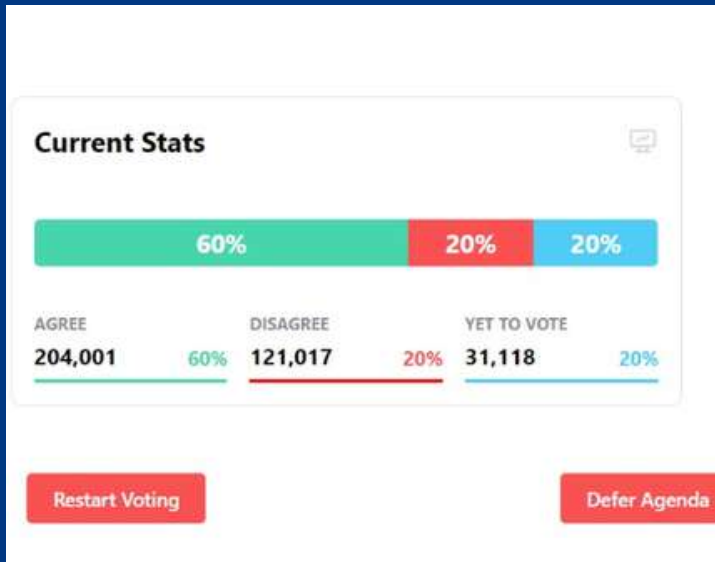
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Technical Council's Report

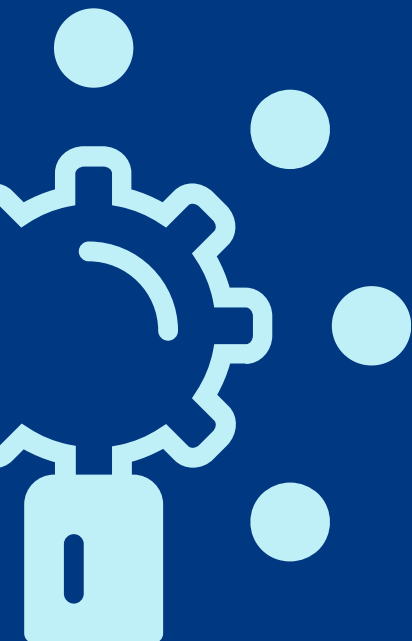
Digitization

The eSenate website has been built as an alternative to the physical Senate meetings held to discuss various agendas. It is a one stop solution for voting and discussing numerous initiatives that are important to the overall improvement of the campus.



The screenshot shows the 'Add New Agenda' form with the following fields and a button:

- Agenda Topic ***: A text input field with the placeholder 'Topic'.
- Notes on Agenda ***: A larger text area with the placeholder 'Notes'.
- Resolution about Agenda ***: A text area with the placeholder 'Please include all relevant resolution about the Agenda'.
- Add Item**: A red button at the bottom right.



Smart India Hackathon

The selection round for Smart India Hackathon was successfully conducted by the Technical Council in September 2023. A total of 41 teams including 24 software teams and 17 hardware teams presented in front of the esteemed judges. 7 teams got selected for the finals and 2 won in the final round.

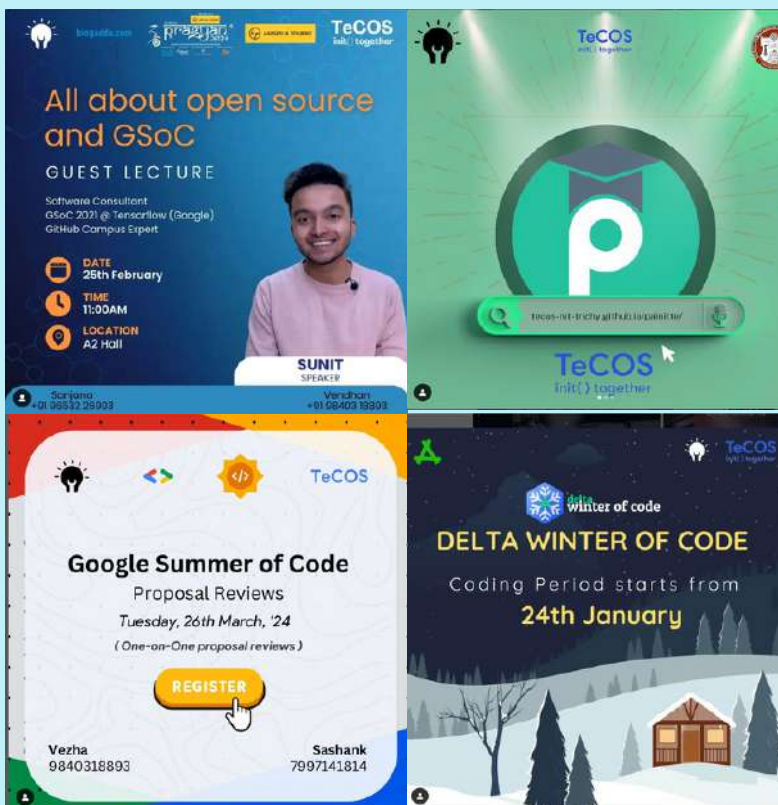


Open Source Development



Technical Council and TecOS aims at promoting Open Source culture in college.

An online speaker session was conducted in collaboration with GDSC-NITT and GDSC-NITS on intro to open source. An informative session was conducted in association with Pragyan'24 on how to contribute to GSOC and open source. Delta Winter of Code, an open source event of NITT was conducted within the timeline of two months.



EVENTS

InhoTTs

The Inter Hostel Technical Tournament is an event that is specifically designed for first-year students to exhibit their technical abilities in different areas. This year's tournament spanned over 12 days and included a range of activities, workshops and competitions. More than 600+ first-year students participated in the events, which provided an excellent opportunity for all of them to showcase their skills.



The competitions were fierce and intense, with a total prize pool of 25k rupees, motivating the participants to give their best performances. The events were organised by various technical clubs and the Technical Council, making it a highly collaborative and engaging experience for all the attendees.

TransfiNITTe 2023

The fifth edition of TransfiNITTe, the flagship hackathon conducted by the Technical Council in collaboration with SCIEnT, concluded triumphantly on October 29th 2023. Over 50 teams, comprising 300+ NITT students, participated in the 42-hour hackathon, aiming to solve problem statements from various software and hardware domains. **Netcon** sponsored a problem statement in Machine Learning, offering a **1 lakh rupees** prize, while **Boeing** provided problem statements with a total prize of **2 lakh rupees**. **Tezos**, the blockchain partner, suggested problem statements with a prize of **50 thousand rupees**. The event commenced at 8:30 p.m. on October 27th at Orion, and ended at 11 a.m. on October 29th.



PRAGYAN Innova-con



Innova-Con was an open event aimed at students to address current issues that directly impact their daily lives. The event's goal was to foster productive discussions and create practical solutions, leveraging the collective knowledge and capabilities of the student community. The event gathered a highly positive response, with a registrations nearing 10 teams, which included participation from other colleges as well.

It was successfully conducted on the second day of Pragyan '24 by the Technical Council. In addition to Innova-Con, NITTGo was organised by the Technical Council, was held concurrently, and both events collectively achieved significant success, engaging over 300 students.

NITTGo

NITTGo was conceived and launched as the premier augmented reality (AR) hunting game developed in collaboration with Pragyan. The app was made public throughout the fest, enabling attendees and on-campus participants to engage with a myriad of events, workshops, and competitions across the campus, all while vying for top positions on the leaderboard. This leaderboard promised enticing rewards and prizes.

In summary, NITTGo proved to be a resounding success, attracting over 500 participants who eagerly competed for prizes while enjoying the experience.



 A screenshot of the 'LeaderBoard' section of the NITTgo app. The title 'LeaderBoard' is at the top. Below it is a list of participants with their names and scores. Each entry consists of a small circular icon on the left, a name in a white rounded rectangle, and a score on the right.

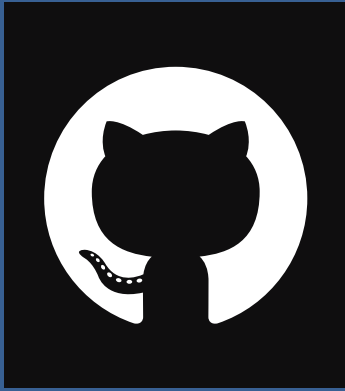
Rank	Participant Name	Score
1	Harrish M	240
2	Rahul R	40
3	Vishnucharan S	20
4	Rithvik Ravilla	20
5	Arunesh Unnithan	20
6	har i	10
7	Adhitya Sriram	0
8	Rahul R	0
9	Tom Joseph	0

Communities' **Report**

TeCCOS

init() together

Annual Report
2024



ABOUT THE COMMUNITY

TeCOS is an open-source community run by students, helping them learn and gain experience in contributing to open-source projects. With over 530 members, TeCOS provides resources and support for students to participate in events such as GSoC and gain technical and soft skills. The community offers mentorship programs, workshops, and speaker sessions to hone their abilities.

Hacktoberfest 2023

Hacktoberfest is an annual month long celebration of open-source software which happens in October. It encourages people to contribute to open-source projects and rewards them with limited edition T-shirts and stickers.

As a community, we supported the initiative by forming a community with over 90 members and provided mentorships to guide students on how to participate in Hacktoberfest.

Git It Done

An online speaker event was organised jointly by GDSC NITS, GDSC NITT and TecOS on the topic - “An intro to Open Source”. Students from both the colleges took part in it with over 90+ attendees. The speakers talked about various open source opportunities and how to get started followed by a doubt clearing session.



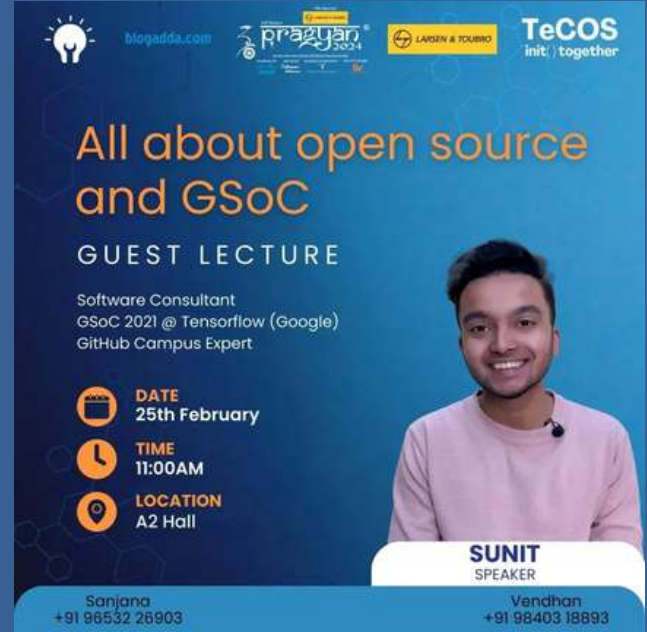
DWoC 2023

Delta Winter Of Code is a winter long program organised by Delta Force in collaboration with TeCOS. It is a program similar to GSoC at the college level with an aim to support and improve the culture of open source software among students. 60+ organisations took part in DWOC as Maintainers. Students contributed to various organisations over a period of 2 months from 24 January 2024 to 15 March 2024. Contributors who completed 4 issues of varying difficulty level were awarded with goodies and prizes.



GSoC Guest Lecture

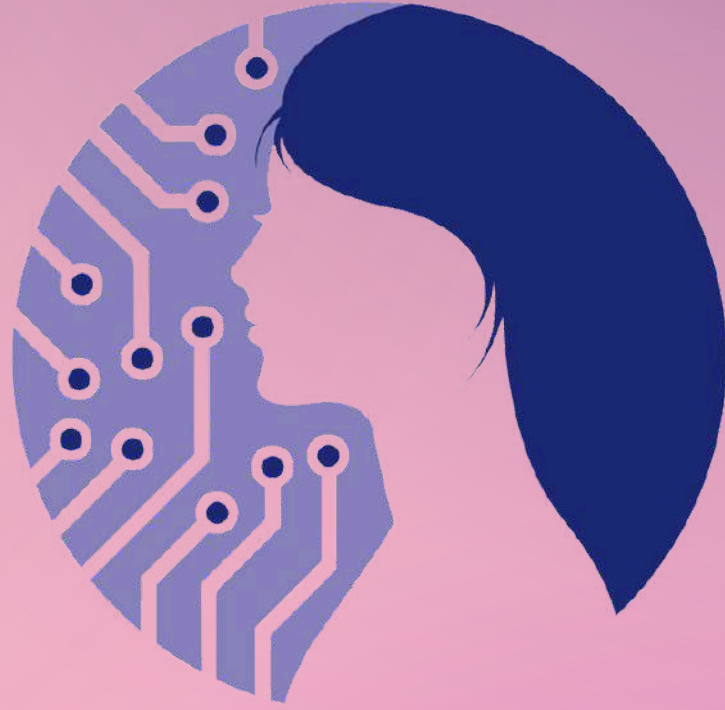
TecOS in collaboration with Technical Council and Pragyan '24 conducted a session focusing on Google Summer of Code. It saw a good participation of 50+ attendees. The session started with discussing contributing to open source followed by a roadmap to contribute to GSoC.



GSoC Proposal Review

Conducted a GSoC proposal review session aimed at helping aspiring students prepare proposals for GSoC 2024. The session featured insights from former GSoCers, who shared their experiences and tips for success in the program.





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2024

Foreword from the President

WIN-NITT is a community initiative formed by women students and alumni of NIT Trichy. We have joined hands to improve the representation of women in STEM fields, thereby inspiring and supporting women in their quest to achieve their technical career aspirations. In the past years, we have grown exponentially, conducting more initiatives and sessions that provide invaluable insights to students aiming to gain clarity on their technical journeys. Our initiatives this year have helped to further our aim of creating opportunities for women students to explore their interest in technology. We look forward to branching out to cover a broader range of domains in the coming year.



Initiatives and Events

WIN-NITT Mentorship Connect (July to September 2023)

An initiative through which student mentees were matched with women alumni volunteers on the basis of common interests and areas requiring mentorship. The program was conducted over a duration of 3 months, which consisted of an introduction meet followed by five 1:1 mentoring sessions between mentors and mentees. With 39 alumni mentors participating across the globe to mentor 53 current female undergraduates at NITT, the Mentorship Program saw a diverse exchange of ideas ranging from research, technology, career transitions, professional development and many more.



WIN-NITT Global Network Community

An initiative through which student mentees were matched with women alumni volunteers on the basis of common interests and areas requiring mentorship. The program was conducted over a duration of 3 months, which consisted of an introduction meet followed by five 1:1 mentoring sessions between mentors and mentees. With 39 alumni mentors participating across the globe to mentor 53 current female undergraduates at NITT, the Mentorship Program saw a diverse exchange of ideas ranging from research, technology, career transitions, professional development and many more.

Ask Me Anything session on Amazon Future Engineer Scholarship (26th December 2024)

An interactive session on Amazon Future Engineer Scholarship. The session was conducted by student speaker Bharani Chandra (ICE, Batch of '26), a recipient of the 2022 cohort of the scholarship, providing insights on the application process and her experience of the scholarship.

AI Almanac Quest (15th November 2023)

A competition conducted as a part of InHoTTs 2023 exclusively for the first years. The aim of the competition is to encourage freshers to gain more hands-on experience with AI tools. We got the registration count of 23 teams with each team consisting of 2-3 students.

Money Matters (1st March 2023)

A workshop on personal finance management and investments conducted as a part of International Women's Day in collaboration with ProfNITT, the Finance and Investments Club. The workshop is conducted with the motive to improve the financial knowledge among women. The workshop is attended by around 80 students from B.Tech, M.Tech and MBA.



Competitive programming workshop and contest (March 6th - 7th 2024)

A workshop on the introduction to competitive programming followed by a CP contest conducted as a part of International Women's Day in collaboration with Spider, the R&D Club. The workshop is conducted with the motive to encourage girls to get started with programming.

Alumni Spotlight Talk with Miruna Bhaskar (8th Match 2023)

The Women Inclusivity Network and Toastmasters NIT Trichy Chapter collaborated to conduct an Alumni Spotlight Talk with Miruna Bashkar, a health coach and certified yoga instructor, as a part of International Women's Day celebrations. The event covered important topics ranging from insights on holistic living and nutrition tips for women, to gender equality in the workplace. It was followed by Table Topics Competition judged by Miruna Bhaskar.



CYPHER

NIT TRICHY'S OFFICIAL
CYBERSECURITY COMMUNITY

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2024

Cypher

CyberSecurity Community

Cypher is the official cybersecurity community of NITT. The community aims to teach the student community about cybersecurity so interested individuals can take it up as a potential career path or help students stay updated with the ongoing field so that they can stay educated and safe from attacks and malware. With the initial launch, we have amassed over 150 members on the Discord server and gained over 400 followers on our social media platforms. Cypher has successfully managed to become a platform for students interested in cybersecurity to come and support each other.



Intro To Cybersecurity Session:

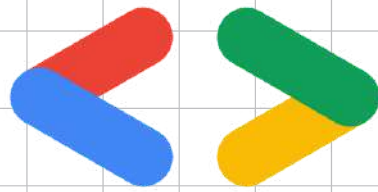
The Intro to Cybersecurity session taught interested people the fundamentals of Cybersecurity and the different avenues they could explore. The basics of CTF(Capture the Flag) and Bug Bounties/ Ethical Hacking were taught and further resources were provided after the session was over.

Pragyan Bug Bounty Session:

The Pragyan Bug Bounty session was a lecture that took place on Day 3 of Pragyan. The lecture focused more on Web Fundamentals and dived deeper into the theory behind finding bugs in various websites. During the session, Tesla was used as the target and the speakers showed different methods to find bugs in their applications through the use of various tools.

Discord Server:

We managed to set up the official Cypher Discord Server, which contained resources compiled by the Cypher team to help people who are new to cybersecurity find a starting point. The server also had its own discord bot that could show upcoming CTF competitions to help interested people compete and. Live hacking sessions were also taken to help students learn how to find bug in productions apps in real time.



Google Developer Student Clubs
Annual Report
2024

ABOUT

The Google Developer Student Club (GDSC) is a university-based community group that is focused on providing students with opportunities to learn and develop their skills in Google developer technologies. The club welcomes students from all undergraduate and graduate programs who are interested in enhancing their knowledge and expertise in this field. Through participation in a GDSC, students benefit from a peer-to-peer learning environment, which allows for the sharing of knowledge and best practices. The GDSC NITT chapter has a membership of 1200+ individuals, including a Community Lead, and a Core team. It has an active Whatsapp community of 700 and a social media reach of 3000+. Notably, all initiatives undertaken by the GDSC NITT chapter have been conducted offline, with great participation and enthusiasm from participants. This highlights the effectiveness of this approach and underscores the importance of the GDSC as a means of fostering learning and growth in the field of Google developer technologies.

GDSC Odyssey: Charting the GDSC Waters

The academic year 2023-24 kicked off with the GDSC Odyssey, an induction session designed to familiarize students from all years with the fundamentals and objectives of the Google Developer Student Clubs (GDSC). During this session, the agenda for the year, including various jams and campaign plans, was unveiled. The initiation of the Google Cloud Study Jams marked a significant highlight. Students were introduced to diverse technical stacks, providing an overview to kick-start their journey in technology. The session culminated with an insightful Q&A segment, addressing the benefits of joining GDSC at NIT Trichy and exploring career development opportunities.



Google Cloud Study Jams

This year witnessed an intensive, month-long Google Cloud Study Jams campaign dedicated to Cloud Computing. With over 150 active participants, students received \$200 worth of credit points to explore and experiment on the Google Cloud Platform. The curriculum encompassed a range of topics, including Cloud Computing Fundamentals, Infrastructure in Google Cloud, Security, Data, Machine Learning, Artificial Intelligence, and Network Building and Security on Google Cloud. Weekly workshops and doubt-clearing sessions were conducted, facilitated by a dedicated GCSJ mentor, providing continuous support and guidance for the participants.



Git it Done - An Intro to Open-source

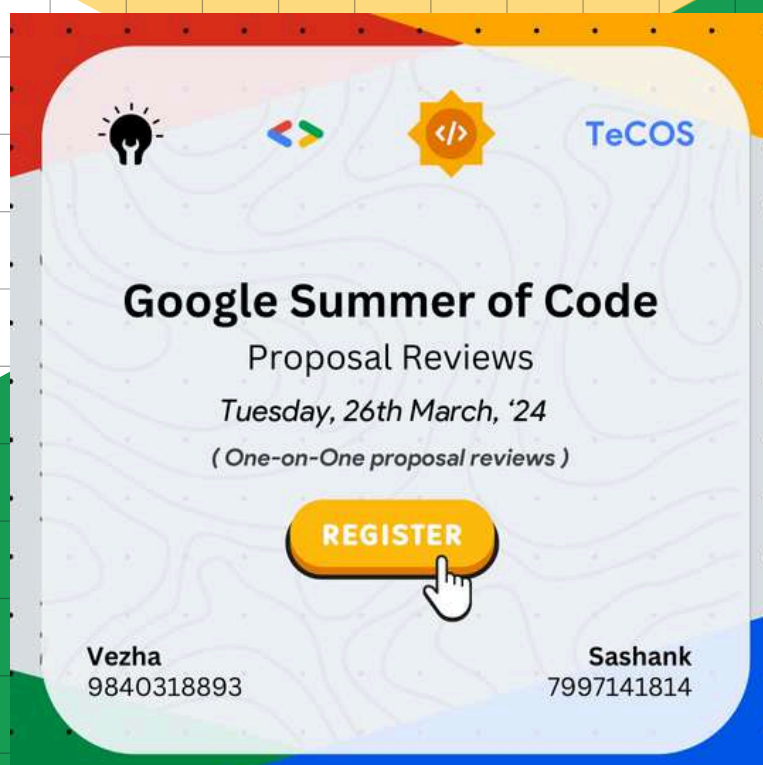
"Git it Done" was an online speaker session conducted in collaboration with GDSC NIT Silchar and TeCOS - The Open Source Community of NIT Trichy. This session focused on exploring opportunities in the open-source domain.

Esteemed speakers, who are former Google Summer of Code (GSoC) achievers, shared their insights and structured plans for beginners to navigate their way through the tech landscape and open-source projects. The session attracted an online audience of over 400 participants. It concluded with a Q&A segment and interactive break-out room discussions, where students engaged in meaningful exchanges about their ideas, projects, and experiences, moderated by students proficient in technology.



Google Summer of Code - Proposal Reviews:

Google Summer of Code (GSoC) is a prestigious program aimed at integrating new contributors into open-source software development. GSoC contributors undertake a 12+ week programming project under the mentorship of experienced developers. In support of this initiative, GDSC NIT Trichy organized a proposal review session for aspirants aiming to crack GSoC 2024. Submitted project proposals were meticulously reviewed by former GSoC achievers. Each proposal was scrutinized line by line, with constructive feedback and modifications suggested based on successful past proposals, enhancing the participants' chances of selection.





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TPFxNITT

The Product Folks is a volunteer-driven community of PMs and enthusiasts who are passionate about making an impact and help everyone grow together. We are one of the earliest TPF campus chapters in the country.

Who are we?

A strong team: Experienced in tech, design and business profile.

Mission: Enhance product culture, nurture product enthusiast, upskill students for career aspiration, make an impact in startups & other companies.

Vision: Get hands on experience on PM roles and produce skilled PMs in profession.



PROJECTS

BROWNFIELD

CAREERBOAT

About the Startup: Career acceleration edtech platform for undergrads and professionals, Backed by Google and Stanford

Major Deliverables: NPS survey to evaluate product, Customer journey mapping, Tracking user behaviour and engagement.

MVP launch: Building an SOP for product operations team and evaluate members required for an operation.

ALMABETTER

About the Startup: An online learning platform offering Data Science and Web Dev courses, a large tech community with leading tech partners.

Major Deliverables: UI/UX suggestions on web to drive free to paid conversions, customer journey mapping, device personalization strategy for known & unknown users.

Future Roadmap: New community engagement initiatives to boost course purchases, gamifying the interface with coins and badge.

LANGUIFY

About the Startup: AI based Ed-Tech solutions provider. With LanguifyAI, educators can effortlessly track student performance and identify areas for improvement.

Major Deliverables: Creating a resume builder as part of their Career Resources Suite, user research for tier 2/3 college students, feature ideation and prioritization using appropriate frameworks.

Current Status: Successfully delivered a Product Requirements Document to their in-house development team, creating wireframes for the ideated product.

GREENFIELD

RIDE SHARING

About the Startup: Carpool peer matching platforms for students coming back or going to railway station/airport.

Major Deliverables: Creating a metric to match people based on time, date and location, user research for NITT students, feature ideation and prioritization using appropriate framework

Current Status: Successfully delivered a MVP and 10+ users have directly benefited, creating wireframes for the ideated product.

FOOD APP

About the Startup: One place app for all street food vendors across a locality with major tracking.

Major Deliverables: Creating a website with all important restaurants for Trichy.

Current Status: Successfully finished primary research to facilitate food street vendors.

EVENTS

APRIL 2023

PM 0 TO 1

Guest Lectures:

Abhishek Choudhary (BITS: Practo, booking.com) :
Career Pathways in PM.

Malayshree (NITT: Paytm, Airasia, Flipkart, Target):
The role of PM

Shivani Chander (NITT: Rubrik, Microsoft): Preparing
for PM roles.

Workshop PM-101:

Panel: Jermiah Thomas (P&G), Bhavya Gupta
(Intellect, Frontrow, Hackerrank, Atom), Mohit
Barahate (Peakmind, Clientjoy)

NOVEMBER 2023

PM EXPEDITION: PRAGYAN INHOTTS

Small bootcamp on how to think like a PM, followed by a 3-4 member team competition for solving a problem statement: Secure Campus.



JANUARY 2024

PEAK THE PRODUCT

Bootcamp:

Building with No-Code: by Harshith

From Ideation to MVP: by Arindam

Guest Lectures:

Ranjan Choudhary (Evalueserve, Infosys)

Priyanka Koribilli (HSA Group, Credit Suisse)

Clubs' Report



180Degrees
CONSULTING
— NITTRICHY —

ANNUAL

REPORT

20
24




Foreword from the President

This year at 180DC NITT, we have navigated a remarkable journey, pushing the boundaries of what is possible in consulting while steadfastly adhering to our core principles of “Creative Ideas, Practical Action, Lasting Change.” Our commitment has not only been a guiding light but a catalyst for transformative contributions across various sectors.

We embarked on numerous ambitious projects, such as aiding Rapter Energy in crafting a unique brand identity in the electric motorcycle market, segmenting the aquaculture sector for Galaxeye to tailor their geospatial analytics services, and supporting Perfios in understanding the unique needs of adolescents in the arts for well-being space within Saudi Arabia. Our collaboration with the Gates Foundation aimed at inclusive agricultural transformation in Bihar, showcasing our dedication to sustainable development and societal betterment.

In addition to client projects, our internal initiatives like the Consulting Case Book and various workshops such as Model to Market, and the Financial Modelling Bootcamp have tremendously bolstered the analytical prowess of participants, preparing them for real-world financial challenges. Events like ‘Decoding Leadership’ and ‘Consult Quest’ provided immersive experiences that helped the participants hone their strategic and leadership skills.





Our participation in national competitions like the HSBC India Business Case Program further underlines our capability and excellence in the consulting domain, securing a place among the top teams nationally.

The year also saw fruitful collaborations, like our partnership with PrepLounge, Practice with Eve, TIME, and the educational workshops that benefited the audience greatly, enhancing their preparation for future consulting roles.

As we reflect on the past year, We are immensely proud of our team's resilience, creativity, and unwavering commitment to excellence. Our achievements are not just a measure of our success but a stepping stone for future endeavors. We are grateful for the continued support from our partners, alumni, and the business community, and we look forward to another year of impactful projects and meaningful change.



Projects

Raptee Energy

To build a cool brand with an electric motorcycle, understand the market and build a community around the brand- strategizing how to be premium in every facet. To understand how to provide a premium customer experience across the entire touchpoint journey from beginning to end and understand the market landscape from a customer-centric standpoint.

Galaxeye

To Divide the agriculture and aquaculture sector into segments (like crop type, aquaculture series, region and company size) and procure data from various sources, including industry reports, market databases, trade associations, and social media

- To Identify potential clients who align with GalaxEye's value proposition, specifically companies that have a clear need for geospatial analytics to improve their operations, productivity, or sustainability
- To Develop a personalised outreach strategy for each potential client, including (but not limited to) cold calling, industrial networking, social media engagement, snatching and referrals
- To Craft a compelling value proposition that addresses the specific needs of each potential client (such as how GalaxEye can help them optimise crop yield, monitor water quality, manage resources) and monitor conversion success metrics for the process

Perfios

To perform primary and secondary market research, in the arts for well-being space, upon the adolescent segment of teens between the age group 13-19 to identify and study their needs and the pain points lending space across Saudi Arabia

- To identify existing products offered by competitors in the same space, and thereby to identify gaps in the market.
- To come up with the most suitable product Client can offer (digitally) the target consumers from the same segment, through the insights derived via market research.

Gates Foundation

Targets and Goals for inclusive agricultural transformation across the following systems six delivery systems in Bihar:

Soil systems

Seed systems

Extension system

Market systems

Digital and partnerships is a Cross-cutting issue

Livestock systems

- Framework for tracking ongoing work across impact and progress; as well as provide framing for gaps
- Short write up on two initiatives; one focused on transforming the agriculture systems in Bihar (seeds, soil, extension and markets) to be more climate resilient; and second to expand export potential for high value agricultural and livestock commodities from Bihar.



Everest - Budget:

- Analyse Team Everest's Current Budgeting Practices and Bookkeeping methodology and suggest changes to Match the NGO Industry Standard.
- Draft a Budgeting template incorporating the said changes so as to increase the operational efficiency of Team Everest.
- Project Future cash flows for team Everest after an in-depth analysis of their previous cash flows.

Everest - Org

- Propose a method to assess the success of Team Everest's Program for college students
- Suggest success metrics across different verticals so as to give a holistic view
- Analyze the responses from the various passed out students and derive key insights on the program
- Create a dashboard to provide a dynamic view of Team Everest's program's success.

Tex-24

- Primarily identifying a GTM strategy and rectifying bottlenecks across the value chain. In parts-
- Identifying critical challenges faced by B2B textile sourcing industries and competitor analysis
- Defining qualitative solutions for the problems identified
- In-depth analysis of the value chain for the company and proposing a Go-to-market strategy
- Strategising PMF for the business model.

Casebook

This Consulting Case Book has been written and curated by the members of 180DC NIT Trichy. We have noticed that a vast majority of students in engineering colleges are not exposed to the resources needed to prepare for several strategy, consulting and business roles offered by companies immediately after a Bachelor's degree. We made this Case Book to fill that gap and provide an easy-to-digest resource for consulting novices to start from.

We also found that it is difficult to become seasoned at case-solving without sound knowledge of various industries. Although learning about different industries takes time and effort, we have attempted to break down key industries into digestible 1-pagers, which will prepare the reader for most case studies in a short period, with a high learning curve.

The members of 180DC NIT Trichy have individually curated, transcribed and validated these cases to take the reader from beginner to advanced through the course of this book.



EVENTS CONDUCTED

ConsultXpo

MODEL TO MARKET

The Financial Modelling Bootcamp is a comprehensive 4-week online course designed for individuals across India eager to enhance their analytical skills in finance. This intensive program consists of three weeks of interactive online sessions and weekly assignments led by industry experts, followed by a challenging week-long real case valuation challenge. Participants will gain practical experience and hands-on expertise in financial modelling, culminating in a high-stakes case competition. Successful completion awards certification and the chance to demonstrate abilities, offering a significant boost to one's career trajectory.



MODEL TO MARKET: POST WORKSHOP FM CHALLENGE

The Financial Modelling Case Competition began with an initial quiz conducted via Unstop, leading to selected participants receiving essential financial reports the following day. These contenders were tasked with analysing the reports to craft a compelling presentation, emphasizing industry analysis, growth identification, valuation, financial projection, and risk assessment. The competition drew to a close with submissions wrapping up shortly after, and the announcement of the outcome following closely. Judging focused on the depth, innovation, and clarity of the presentations, providing a stage for participants to exhibit their expertise in financial strategy.

CAT- APULT

CATapult was a preparatory mock examination event for CAT and MBA aspirants held at our college, located in the Lecture-Hall Complex (LHC) at NIT Trichy. Aimed at stimulating the intensity and format of the Common Aptitude Test (CAT), India's premier entrance exam for prestigious management institutions like the IIMs, the event provided participants with both guidance and first-hand experience in tackling the CAT exam. The initiative featured a seasoned CAT expert, renowned for assisting students in successfully navigating the CAT, who oversaw a mock CAT exam and then led a detailed discussion on the paper. This discussion covered analysis of the exam, strategies for attempting the paper, question breakdowns, and more, offering participants invaluable insights and preparation tips.



DECODING LEADERSHIP

Unveiling the essence of exceptional leadership, ConsultXpo's 'Decoding Leadership' panel discussion, hosted by 180 DC NIT Trichy, took place on February 3rd at 11 AM. This past event offered an immersive exploration into strategic success and leadership dynamics, featuring insights from the consulting industry's luminaries. Amod Vijayvargiya, Harish Rani, Maansi Gupta, and Shubham Agarwal led a stimulating session that empowered and inspired attendees. Participants had the unique opportunity to engage with the forefront of business innovation and transformation, where seasoned experts shared their wisdom on navigating the challenges of leadership. This gathering marked a pivotal moment for those in attendance, providing a platform where insight met impact at the heart of business leadership.

INSIGHT INQUEST

The event commenced with a perception-challenging mini-quiz followed by the Consult Board Game, where teams of two competed in estimation, analysis, and persuasion. In the first round, the fastest 16 teams advanced by submitting their forms within the allotted time, without engaging in discussions or malpractice. The second round featured a strategic board game where four teams at a time faced tasks triggered by dice rolls, with success allowing advancement and failure resulting in lost turns. The first team to finish the game moved to the finals, guided by the final decisions of the judges. This event rigorously tested participants' strategic thinking and persuasive skills, identifying the most adept players as victors.



PROD IT

Prodlit was a showcase of participants' proficiency in Product Management. Teams were given a choice among three problem statements, with the task of selecting one to focus on. They had 30 minutes to craft their solutions, after which each team presented their findings to assigned mentors for evaluation. This stage allowed participants to receive valuable feedback, further refining their approach. Subsequently, teams were allotted two hours to develop a Product Deck based on their proposed solution. This round not only tested the participants' ability to apply Product Management concepts under time constraints but also their skill in communicating their solutions effectively through a comprehensive Product Deck. The competition provided a dynamic platform for participants to demonstrate their innovative thinking and solution-oriented mindset.

CONSULTCON

The event comprised three engaging rounds, each designed to challenge participants' skills in various domains. Round 1, titled "Crossword Mania," tasked teams with solving a consulting and risk management-themed crossword puzzle within 45 minutes, with the option to request additional hints at the cost of time. In Round 2, "Budget Blueprint," participants drafted a budget for a fictional company using provided financial data and scenario cards to navigate unexpected market shifts and regulations. The competition culminated in Round 3, "Strategy Showdown – The Shark Tank Simulation," where participants demonstrated their critical thinking, innovation, and persuasive skills in a high-pressure investment pitch simulation.



CRACK THE CASE

The college case competition, open to undergraduate and postgraduate students from universities and colleges nationwide, successfully concluded. It commenced with teams of three registering for an engaging AI-based problem-solving task in Round I, utilizing the Practice with Eve platform. Following this, shortlisted teams advanced to Round II, where they were challenged with real-world scenarios requiring the submission of their solutions in the form of PowerPoint presentations. This event not only tested participants' analytical and problem-solving skills but also provided a unique platform for presenting practical solutions to complex issues.

ROOT CAUSE RENEGADE

The recently concluded college case competition welcomed undergraduate and postgraduate students from across various colleges and universities. Initiated with a quiz on Unstop, teams of three embarked on the first round, setting the stage for the competition's engaging start. Successful teams from the quiz round were then presented with scenarios mirroring real-world challenges, where they were expected to formulate and present viable solutions. The event unfolded in three distinct rounds: beginning with the Unstop quiz, followed by the case analysis phase for advancing teams, and concluding with the final solution submissions. This event served as a dynamic arena for students to leverage their theoretical insights in addressing practical issues, enhancing their strategic and analytical prowess through a hands-on approach to problem-solving.



INHOTTS

CASE INTERVIEWS UNLOCKED:

The workshop began with explanations of various case scenarios such as market entry and profitability, followed by discussions on frameworks like 3Cs and PESTLE. Organizing team members then conducted mock case interviews, simulating the recruitment processes of consulting and analytics firms. This session was extended to all attendees, offering a practical experience in case interviews. Afterwards, the team provided insights into case competitions, covering aspects like team formation and presentation skills. By the end of the workshop, participants had gained a comprehensive understanding of case interviews and the structure of case competitions.

CONSULT QUEST

Consult Quest was a thrilling treasure hunt themed around management consulting, where teams tackled puzzles and strategic challenges across stations with varying difficulty levels. Each station offered problem statements simulating real-world consulting scenarios, requiring participants to use strategic thinking to solve them. Points were awarded based on the difficulty of the questions, with an emphasis on strategic selection to maximize scores. The event provided an engaging and enriching experience, allowing teams to approach questions in any order and strategize to optimize their points within the allocated time frame, encapsulating an immersive exploration into consulting.



Orientation

BOARDROOM SHOWDOWN:

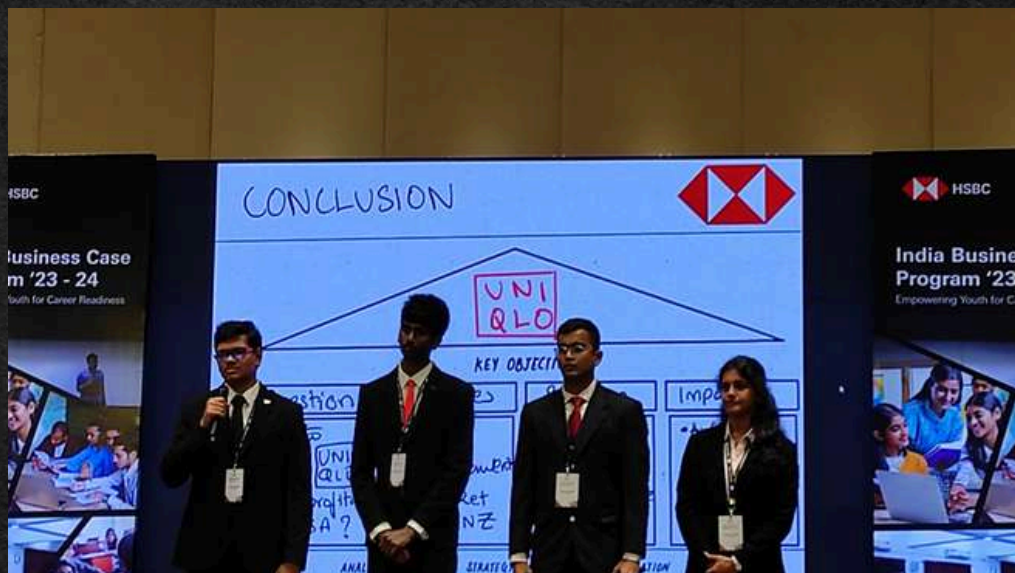
The Boardroom Showdown featured two rounds: an online crossword challenge focused on consulting and risk management, followed by an offline enactment round. In the first round, participants submitted answers through Google Forms within 30 minutes, with accuracy and speed as the key judging criteria. The second round involved participants forming teams of four, where they engaged in a role-play simulating a boardroom scenario, requiring strategic thinking and collaboration. This event tested participants' industry knowledge and ability to work under pressure in both individual and team settings.



Competitions Participated

HSBC

"The Big 4," a team comprising our club members, has reached the National Level Competition of the prestigious HSBC India Business Case Program (HIBCP) 2023-24. This team stands among the elite top 12 teams selected nationwide, after a comprehensive and competitive selection process lasting over four months.



BharatX

Our club participated in a collaborative project with BharatX, a fintech startup, alongside 180 Degrees Consulting student chapters across India. We were tasked with analyzing the education loan sector in India, focusing on its challenges, trends, and innovation opportunities. Our submission, highlighting in-depth research and strategic insights, successfully placed us among the top 3 finalists.





Collaborations

Preplounge

PrepLounge brings together aspiring management consultants from around the world to practise for their case interviews. They offer interactive content and personalised training plans that will get you closer to your dream job at a top consultancy. We partnered with them, procuring a student discount for using their resources for the winners and participants for consultXpo.

TIME

TIME Institute offers entrance coaching for CAT, GATE, IPM, CLAT, BBA, BANK PO, SSC CGL, GRE, GMAT, IIT Foundation. We partnered with them to conduct a mock CAT test for interested students and the top 5 scorers got a discount on the CAT, GMAT and GRE courses offered by time.

PracticeWithEve

PracticewithEve is a first of its kind AI based management consulting prep platform for students. Built with a comprehensive case library for students to choose from, Eve's every aspiring management consultant's virtual case-solving coach. The winners of the case comp conducted during the 2nd edition of consultXpo were provided life time free access to their online platform.



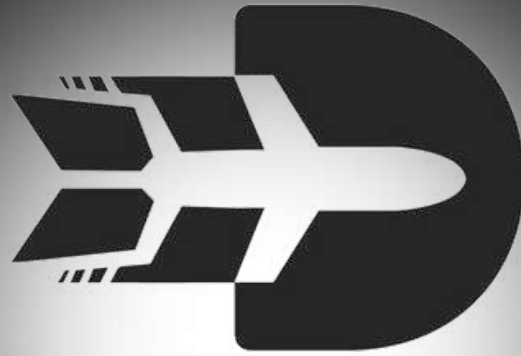
Mentors

Varun Agarwal

Varun Agarwal, an experienced professional in the investment banking sector, conducted an insightful session on June 24, 2023, detailing the strategic role of investment banks in facilitating capital access and advisory services for companies. During the session, he elaborated on the critical functions of investment banking, such as financial modelling and market capital analysis, essential for forecasting and understanding company value.

He also highlighted the key skills necessary for a career in investment banking, including analytical capabilities, a knack for industry analysis, and a passion for continuous learning. Offering practical advice to aspirants, Varun recommended various educational paths and resources like pre-MBA programs and specialised books like "One Up on Wall Street" by John Rothchild. Despite the demanding nature of investment banking, Varun emphasised its rewarding aspects, making it a lucrative career for those deeply interested in financial markets.





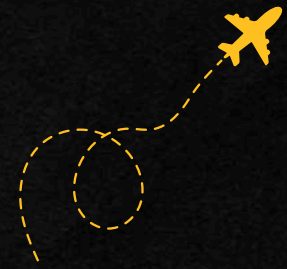
THE 3RD DIMENSION

AEROMODELLING CLUB OF NITT

ANNUAL

REPORT

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Foreword

As Henry Ford rightly said, "Coming together is a beginning. Keeping together is progress. Working together is a success." The club has grown leaps and bounds since it was established in 2013 by a group of students who took the path least traversed. It was our privilege to be the Core for the academic year 2023-24 and carry the club of over 40 aeromodelling enthusiasts forward with a vision of fostering creativity and innovation in aviation by pushing boundaries and collaborating with skilled aeromodellers. We had the opportunity to spearhead the rocketry and student satellite initiatives, setting the course for the upcoming generations.

This academic year was filled with opportunities and learnings for the club. We represented and brought laurels to NIT Tiruchirappalli in nationwide competitions such as the Aerothon conducted by the Society of Automotive Engineers and the Boeing Aeromodelling Competition conducted during Shaastra, the technical fest of IIT-Madras. To fuel the passion for knowledge and research, we undertook projects encompassing VTOLs, Rover-Quadcopter convertible and Ornithopter that the experts highly appreciated during Sangam 2024. Furthermore, we presented our paper on the Drone design method at the prestigious ICAMAE Conference 2023.





Additionally, we conducted the AeroRIX workshop exclusively for first-year students to introduce them to the intricacies of aircraft and rockets.



Then, as a part of Pragyans' Inhotts, we organized the egg-drop challenge, where we witnessed the innovation in the design of carrying an egg. With the ever-evolving aerospace industry and students' undying curiosity, we successfully conducted sessions as a part of Synergy 2024 and (Sensors 2024?) to share knowledge on aerospace engineering and avionics. We participated in Conscientia 2023's Rocketry workshop, conducted by the Indian Institute of Space Science and Technology, Thiruvananthapuram, demonstrating the team's commitment to hone their technical skills and widen their knowledge.

This term report is a testimonial to our initiative to take the club a step forward and create an ever-lasting impact on the college's student community. As we pass on the baton, we firmly believe that united in teamwork, fueled by technological development, and soaring to new heights in aeromodelling, the club will find the motivation to reach for the stars and achieve greatness.

We are grateful to our faculty advisor, Dr. Nanda Naik Korra, Associate Professor, Department of Mechanical Engineering, for his immense support and guidance, the Technical Council for their timely help and the Scientist for facilitating the development of projects.

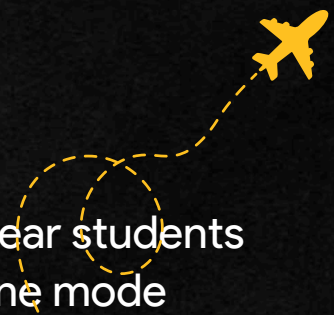


1. Aerotrix Workshop

Aerotrix, our annual flagship workshop for first-year students at NIT Trichy, was successfully conducted in offline mode from May 16th to May 20th, 2023. This workshop marked a significant milestone as it was the first event of its kind held after the pandemic. They had the opportunity to delve into various aspects of Unmanned Aerial Vehicles (UAVs), Image Processing techniques, Fundamentals of Aerodynamics and software tools such as XFLR5 and SOLIDWORKS. Moreover, the workshop featured dedicated fabrication sessions for the Pursuitron bot and the glider, allowing the participants to engage in hands-on activities by providing them with takeaway kits. This practical approach further deepened their understanding of aviation and aerial robotics. Students from various departments registered for the workshop and attended all five days with a lot of interest and curiosity to learn new things. At the end of workshop, the glider and bot which they fabricated were tested and certificates were provided individually to over 100 participants.

2. AeroInvent

AeroInvent is our intra-club challenge conducted to strengthen the foundational skills of the incoming inductees. The task is to design an RC Aircraft from scratch, aligning the constraints of the problem statement developed. Inductees are organised into three teams and operate within a timeline spanning from September to November, covering brainstorming, conceptual design, and analysis, culminating in presentations and hands-on fabrication sessions. This was concluded with a piloting session and thorough testing of the fabricated models.





This comprehensive event strengthens their grasp of key technical aspects, improves teamwork and fabrication skills and prepares them for upcoming competitions and real-world challenges.

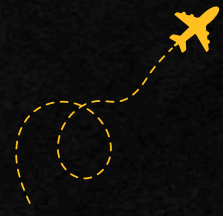
3. Conscientia - IISc Model Rocketry Workshop | 23rd – 25th Sept 2023

A team from the club participated in a Rocketry workshop conducted during the technical fest of the Indian Institute of Space Science and Technology, Thiruvananthapuram, Conscientia 2023. It was a two-day offline workshop from 23rd September 2023 to 25th September 2023. On the first day, our team, comprising three third years, learned the basics of model rockets and their driving principles. On the second day, they got hands-on experience in miniature astronautics. They built a model rocket using the materials provided to them in the workshop. This model rocketry workshop is a small step towards enhancing our knowledge and further developing the rocketry domain of our club.

4. SAE Aerothon | April – Nov 2023

A team from our club actively participated in the Aerothon 2023 drone development competition organised by SAE India, hosted at SJCIT, Chikkaballapur, Karnataka. The competition entailed months of dedicated effort and broadened our understanding of drone manufacturing. Representing our club, a team of ten 3rd-year students competed and secured the second position nationwide in the Design phase.





Throughout September and October, our team built our unique drone design from scratch. We utilized our college's NVH lab to create Carbon-fibre composite structures for the drone and hardware tools from the SCIENT lab during fabrication. Subsequently, we conducted successful tests of our drone within our college premises, participated in the competition, and secured the eighth position in the Flight test phase. The experience during the entire process proved invaluable, contributing significantly to our knowledge base.

5. Smart India Hackathon | Sept – Nov 2023

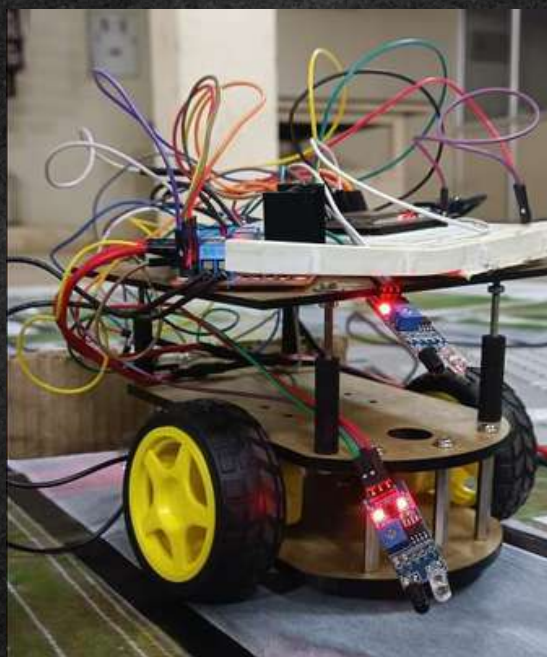
We participated under the Hardware category in SIH 2023 conducted from September to November, with our projects focusing on medical emergencies, search and rescue operations, and transportation and surveillance. Under the sustainable problem statement, Team WECtor presented their project focusing on vessels and container ships having their power generation system, thereby reducing the dependence on fossil fuels. To study and monitor the activities of boats and ships in the port region, we designed a swarm drone with the ability to detect suspicious activities. Another project involved our team demonstrating the utility of Fixed-wing VTOLs for carrying medical payloads and providing aid during a natural calamity. After qualifying for the internal rounds, the teams comprising third and second years were exposed to the nationwide competition, thereby using this opportunity for professional and technical growth.



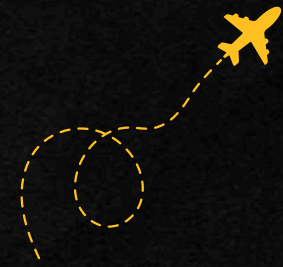


6. Eyantra Robotics Competition | Sept 2023 – Feb 2024

Our club actively participated in the annual eYantra Robotics Competition hosted by the Indian Institute of Technology Bombay (IIT Bombay). This prestigious competition offers a unique blend of rigorous challenges and hands-on learning, propelling participants into the realm of cutting-edge robotics and its real-world applications. This year, we deployed two highly skilled teams of eight members each to tackle two distinct themes: the Holographic Bot and the GeoGuide. Both themes presented stimulating technical challenges, demanding expertise in motion control, computer vision, and autonomous navigation. Through months of dedicated effort, both teams successfully navigated the elimination round to secure their coveted hardware kits. One of the teams competed in the Semi-final round of the Holographic Bot challenge, demonstrating exceptional problem-solving ability and technical prowess.



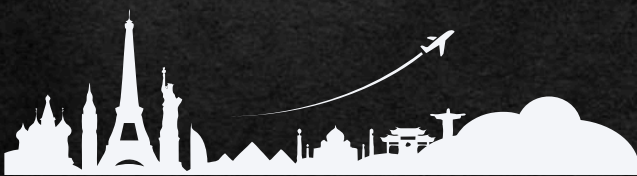
7. Workshop in collaboration with the Mechanical Engineering Association | 11th Oct 2023



The Third Dimension Aeromodelling Club, in collaboration with the Mechanical Engineering Association (MEA), conducted a 3-hour workshop session exclusively for first-year Mechanical engineering students to introduce them to the unique world of aerial robotics and UAV systems. The workshop's objective was to give the students insights into the fundamentals of aerodynamics and avionics and their applications in developing aerial systems. The workshop had a footfall of 130 freshers (nearly 90 percent of the total first-year students). The interactive session between the students and Senior members of the club fostered a healthy learning environment and ignited the curiosity of the inquisitive freshers to further delve into the world of Unmanned Aerial Systems. The workshop introduced and equipped young mechanical engineers with the necessary skills to develop themselves as successful engineers. Emphasis was laid on a proactive and discussion-based learning pedagogy to ensure participation from the large student group.

8. Egg Drop Challenge – InHotts | 25th Nov 2023

In collaboration with Pragyan, we organised an intellectually stimulating online event, the Egg Drop Challenge, as part of Inhotts 2023. Tailored exclusively for the first-year students of NIT Trichy, this event took place on November 25th. Participants were given the intriguing task of conceptualising and demonstrating a payload bay designed to protect an egg from breaking upon impact.





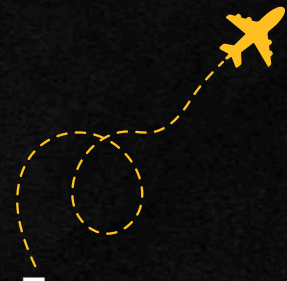
The challenge provided an engaging platform for the students to apply theoretical knowledge in a practical setting. The winners were bestowed with a cash prize worth one thousand and five hundred rupees, adding a tangible reward to their innovative achievements.

9. ICAMAE Conference | 28th Nov 2023

Our SAE Aerothon 2022 team has submitted and presented a research paper titled "Autonomous Multi-Rotor UAVs: A Holistic Approach to Design, Optimization, and Fabrication" virtually at the First International Conference on Advances in Mechanical and Aerospace Engineering (ICAMAE 2023) jointly conducted by Alliance University, India and University of Strathclyde, United Kingdom on 28th November 2023. The team has proposed a structured methodology for the design and Fabrication of Multi-Rotor UAVs and has successfully validated the same by designing, fabricating and testing a quadcopter by incorporating the proposed methodology. Various aspects, including the conceptual design of the frame and the payload mechanism, the use of composite materials like Carbon-Fibre Reinforced Polymer (CFRP) and Carbon-Fibre Balsa sandwiched composites, advanced fabrication techniques such as additive manufacturing and vacuum bagging, selection of electronic subsystem hardware, design of the autonomous system and fabrication have been covered. The article was submitted to the Aerospace track and has been published in the conference proceedings.



10. Boeing Aeromodelling Competition- IITM Shaastra 2024 | Dec 2023 – Jan 2024

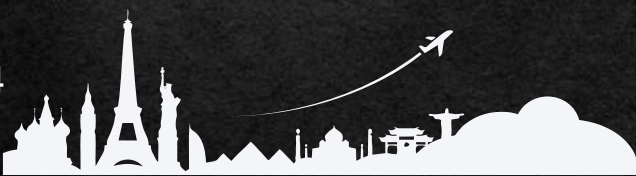


The Boeing Aeromodelling Competition in the South Zone was held at IIT-Madras on the 4th of January and the 5th of January 2024 as a part of Shaastra'2024. Two teams comprising four students from the B.Tech second year of study from various departments participated in this prestigious event. The competition was held in two rounds. In the first round, the team drafted a technical report on the design of fixed-wing UAVs, satisfying the given constraints. Based on the constraints, the teams fabricated a UAV capable of carrying multiple golf balls. The second round was a flying round, where our pilots flew their aircraft. One team made it to the subsequent round, where they had to drop the payload. They received a cash amount of 5000 INR.



11. Sangam Hardware Hackathon | Jan – Feb 2024

For the Sangam Hardware Hackathon, as part of Pragyan, the technical fest of NITT, we worked on four projects to participate in the three given themes. Three project teams qualified to the finals, which are as follows:





ORNITHOPTER

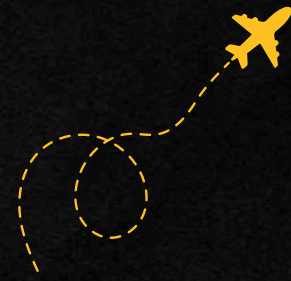
The miniaturized ornithopter subsystem for military surveillance boasts a compact design, with a fuselage length of 400mm and height of 70mm, optimizing for stealth and maneuverability. Its wing spans 700mm with a chord length of 300mm, modeled after a pigeon wing for efficient lift and stability. Powered by a dual crank mechanism, it emulates bird-like wing flapping, producing 2.8N of force at five flaps per second. The subsystem utilizes a 9V HW battery to drive an N20 DC motor, ensuring silent and stealthy operations. With a weight of approximately 200g, the ornithopter maintains agility while carrying advanced sensing devices, cameras, and microphones for optimal surveillance capabilities. Its cost-efficient design makes it accessible for military applications. Furthermore, including a self-destructing kill switch enhances security, preventing unauthorized access to sensitive information. Overall, this ornithopter presents a powerful reconnaissance tool that maximizes efficiency while minimizing risks in military surveillance operations. Under the Defence category, Team TALONICS backed the third position.

VTOL

Our project explores the potential of a Tri-copter VTOL that transitions into a Fixed-wing aircraft with an innovative motor tilt mechanism. VTOL aircraft offer a unique amalgamation of advantages derived from drones and conventional aircraft. They possess the capability to vertically take off and land, eliminating the necessity for a traditional runway.



Additionally, the incorporation of wings facilitates passive lift generation, thereby reducing the reliance on high-speed motor operation. Notably, VTOL platforms excel in stationary hovering, a feature particularly advantageous in surveillance missions.



Our aircraft utilizes 1400KV Sunnysky X2216 Brushless Motors in conjunction with APC 9047 Propellers. The wing structure comprises ribbed components constructed from Balsa and Aero ply, enveloped by a Monokote Cover. Moreover, the integration of carbon fibre and balsa reinforcements enhances both weight reduction and structural robustness. The inherent versatility and efficiency of VTOL technology render it applicable across a diverse array of fields, including disaster relief, defense operations, and surveillance endeavours. As VTOL technology continues to progress rapidly, its potential applications expand exponentially. Team RAWEN won first place in the Environment Category.

MORPHOBOAT

Project Morpho Bot introduces an innovative idea for a reconfigurable robot system tailored for the defence industry. This novel design presents a unique benefit by being able to transform between a ground-based rover and an airborne drone. This transformative feature, likely enabled by a linear actuator mechanism, allows the Morphobot to traverse intricate environments efficiently. In its rover form, it can navigate challenging terrains, while in drone mode, it can overcome physical obstacles and offer valuable aerial monitoring.





Additionally, the Morphobot has specialized circuits for detecting landmines, significantly minimizing the danger of casualties in mine-clearing missions. Its dual capability to operate on land and in the air enhances its surveillance capabilities, providing a comprehensive tactical overview for military personnel. Ultimately signifying a notable advancement in defence robotics, offering versatility, adaptability, and heightened situational awareness for ground troops.

Along with Sangam projects, we also displayed our other notable works, ranging from multi-rotor UAV, Blended-wing body UAV to hot-wire CNC cutter and the gyroscopic wave energy converter at the Pragyan Open House conducted on 24th February 2024. This occasion allowed us to interact with venture capitalists, industrialists, and experts who provided valuable insights into scaling the project's scope. It was our pleasure to interact and explain our models to the inquisitive school students who were captivated by drone technology advancements.

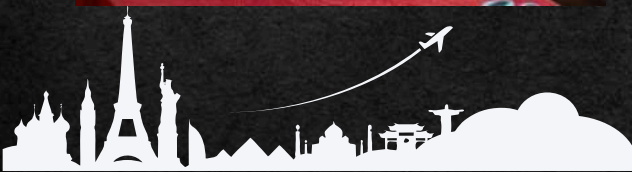
12. Scient Annual Day | 15th April 2024

During the Scient Annual Day we presented our fixed-wing electric propelled UAV, which was developed in house using CNC cut EPS form and balsa wood and Carbon rods for structural stability. This light-weight UAV can carry a payload of 250 grams precisely to a specified destination mid-flight. Another exhibit included a multi-rotor Micro class UAV, the components for which were manufactured at NIT Trichy's Composites Lab.





Recognizing the efforts of the team, the jury presented them second position in the event, awarding them a cash award of 3000 INR. The drone can perform manual and autonomous operations for precise inflight payload delivery. This project won second place in the Open house event. We also presented VTOL UAV with a wingspan of 1.5m capable of generating a lift force of 26N that can be utilized for surveillance, disaster relief, and defense applications.



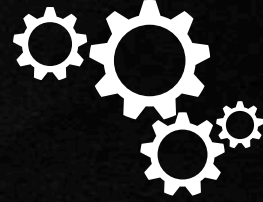


Builders' Hive

ANNUAL

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FOREWORD FROM THE CORE

As we present the Annual Report of the Builders' Hive for this year, we are delighted to reflect on our incredible journey of learning, innovation, and growth. This year has been a testament to the resilience and dedication of our members, who have continuously strived to expand the boundaries of civil engineering through rigorous academic pursuits and practical applications.

Our club, a melting pot of aspiring engineers, has always aimed to bridge the gap between theoretical knowledge and real-world challenges. This report encapsulates not only our activities but also our accomplishments, which define the enthusiasm and perseverance of the club members. Through workshops, guest lectures, competitions and projects, we have endeavoured to enhance the technical competence and professional acumen of our members. This report includes a detailed account of the projects undertaken, which include the 'Civil Park' and 'Retrofitting of Buildings'. These projects, in addition to honing the skills of the club members, will also contribute significantly to the welfare of the campus.

This has been a year of many 'firsts', which includes the first collaboration with various student organizations within the NIT Trichy campus, such as the Association of Students of Architecture (ASA) and the Civil Engineering Association (CEA). These collaborations have provided the club members and aspiring engineers with an array of new learning opportunities. Additionally, this has been the first year of the Indian Concrete Institute.

(ICI) Student Chapter at our institute, which is a part of Builders' Hive. The ICI organized various Expert Lecture Series and competitions which were aimed to upskill the young engineers.





As we look forward to another exciting year, we remain committed to upholding the values of innovation, integrity, and service that our club stands for. This report is not just a compilation of our past year's work; it is a beacon that guides us towards future endeavours.

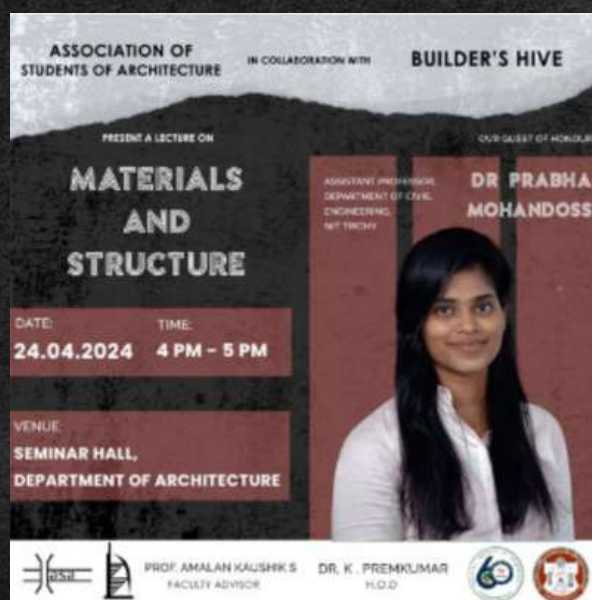
We extend our heartfelt thanks to all club members, faculty advisors, alumni, and the students' and technical council members for their invaluable support and guidance. It is your unwavering support that fuels our passion and drives us to push the envelope further each day.

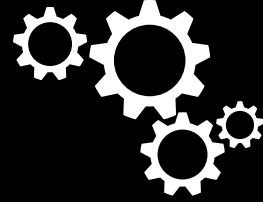
Thank you for being part of this inspiring journey. Let us continue to build on our achievements and aspire for greatness in all our future endeavours.

GUEST LECTURE ON 'MATERIALS AND STRUCTURES

Builders' Hive, in collaboration with the Association of Students of Architecture (ASA) at NIT Trichy, organized a Guest Lecture on the area of 'Materials and Structures' on 24 th April 2024. The speaker for the event was Dr. Prabha Mohandoss, Assistant Professor from the Department of Civil Engineering. Through the lecture, Dr. Prabha provided insights on various research projects that she was apart of, the learnings and lessons from them. She also underlined the various similar aspects where architects and civil engineers work together, giving the architecture students and increased perspective on their role in the professional industry.

The event had a footfall of 60 students from both the Civil Engineering and Architecture departments.





SCRAP HOUSE

Scrap House competition was an event under Inhotts (Pragyan) held on the 25 th of November. Around 18 students from various departments participated and were tasked with transforming scrap materials into model houses. The participants were provided with scrap materials and essential items required for the task. The participants crafted unique houses from discarded materials and showcased an eco-friendly approach to creativity.



AUTOCAD AND SKETCHUP WORKSHOP

We organized an AutoCAD and SketchUp workshop on 29 th March 2024 in collaboration with the Civil Engineering Association (CEA) at NIT Trichy, during Moments' 24. Through the workshop, participants gained a comprehensive understanding of the AutoCAD software and hands-on experience in creating a basic building plan.

Additionally, through the SketchUp workshop, participants gained an understanding of how 3D models of building plans can be created from the existing 2D plan. The workshop had a footfall of over 50 students from various colleges across the country.





INK-TRIGUE ODYSSEY

Ink-Trigue Odyssey was an event tailored for sophomores with the aim of promoting our club induction process. Held in August 2023, the event featured competitive activities, and the winners were rewarded with impressive cash prizes totaling rupees 3000. This initiative garnered substantial attention from young, enthusiastic individuals, significantly enhancing awareness and generating positive publicity for Builders' Hive among the student community.



CIVIL UNVEILED

We proactively conceptualised an innovative and captivating post series entitled “Civil Unveiled”. Through this series, we profoundly illuminate career selection within diverse civil engineering branches through job prospects, contemporary research, and high-demand regions, where we exclusively delve into vital civil domains, expand the knowledge in those domains and the job opportunities across them to dispel uncertainties among budding students who are embarking on their civil engineering journey.

CIVIL UNVEILED

Building Material Engineering

Building Material Engineering is vital for studying and applying durable construction materials. They provide strength, durability, and functionality for structures like skyscrapers and homes. Materials like concrete, steel, wood, and innovative options offer unique benefits. Architects, engineers, and builders use this knowledge to meet design demands and create long-lasting structures.

JOB OPPORTUNITIES

- MATERIALS ENGINEER:** Conduct research and experiments to create novel building materials for construction applications.
- CONSTRUCTION MANAGER/PROJECT MANAGER:** Coordinating and managing construction projects and coordinate building materials, quality, scheduling, budgeting, and stakeholders.
- RESEARCH AND DEVELOPMENT SCIENTIST:** Conduct innovative experiments to advance knowledge and create cutting-edge technologies.
- SUSTAINABILITY CONSULTANT:** Promoting eco-friendly practices in building material production and construction as sustainability consultants.
- BUILDING INSPECTOR:** Ensure compliance with building codes and material standards.



ULTRATECH SITE VISIT

On 14th October 2023, a group of 45 students, accompanied by Professors Dr. Prabha and Dr. Sevugan from the Department of Civil Engineering, embarked on an insightful visit to an UltraTech RMC plant. The visit focused on understanding the intricacies of Ready-mix concrete production and the specialized techniques employed in its transportation, especially for extended distances. Participants gained a comprehensive understanding of the intricate processes involved, from formulation to quality control. The experts also gave insights to the students regarding the transportation of ready-mix concrete over extended distances. The visit emphasized safety protocols and innovative techniques to ensure the material's integrity during transit. The engagement with industry experts at UltraTech proved invaluable for the student's academic and professional growth.



INTERN TALK

We organized an intern talk on September 2023, for all students of the campus. The event aimed to educate and provide insights to the junior students on internships, the various opportunities available and the application process.

The 4th-year seniors from diverse domains such as Civil core, Consulting, software, and analytics, alongside the MITACS and DAAD Wise scholars, shared their experiences. With attendees spanning all academic years, the event had a footfall of over 50 students.





ACI OUTSTANDING AWARD

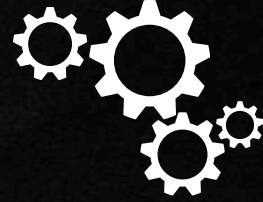
Builders' Hive was awarded the prestigious ACI Outstanding Award in 2021 and 2022 by the American Concrete Institute (ACI) for our commitment to innovation, quality, and professionalism in the construction industry. One of the club's notable projects is the development of self-healing concrete, for which it was ranked 7th globally in the ACI concrete spring competition held in 2022. The success is attributed to our team of highly skilled civil engineering students who are dedicated to delivering exceptional results for the projects.



INTERVIEW SERIES

We launched our “Interview series”, as part of our ongoing efforts to share knowledge and experiences with the audience. The series features eminent industrial personalities and renowned academicians, providing a unique opportunity for viewers to gain insights into the latest trends, practices, and technologies shaping the industry. The first two interviews in the series featuring Dr. Mark Alexander and Dr. Nishant Garg, two eminent experts from the field, released in August 2023.

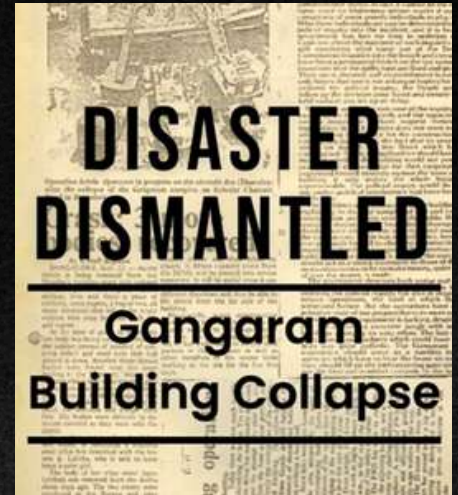




ONGOING ACTIVITIES

DISASTER DISMANTLED

Disaster Dismantled is an ongoing reel series that investigates the possible reasons that led to various civil engineering disasters. Apart from providing information about the incident, the series also highlights the steps/safety measures that should have been undertaken to prevent the incident.

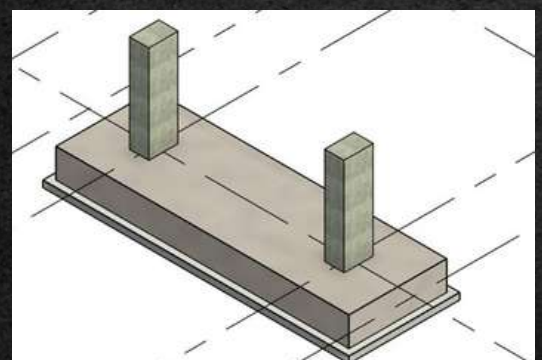
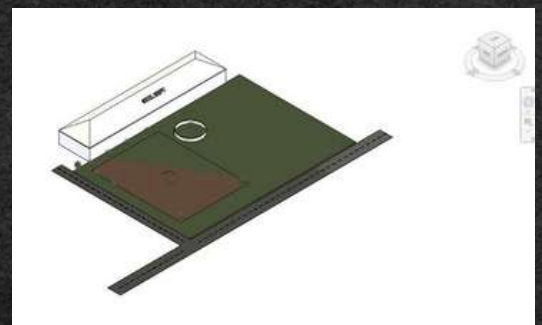


BLOG SERIES

We are doing a weekly blog series on the various topics related to the civil engineering, mainly focusing on the interlinking of various latest technologies with the construction industry. The first two blogs of the series were released in the month of March, which focused on 'Modular Construction' and 'Smart Cities'.

PROJECTS

The Civil Engineering Department of NIT Trichy is developing a technology park to showcase various civil engineering concepts. Our club has been assigned the design work. Our work involves surveying the site, creating CAD models, and designing the site and structures using Revit software. The goal is to educate and engage the public about civil engineering in an interactive and visually appealing way.





RETROFITTING OF BUILDINGS

This project explores the critical role of retrofitting in enhancing the longevity of deteriorating buildings and addressing the significant energy consumption in developed and developing nations. Focused on structures aged over 30 years at NIT Trichy, the study employs Ansys simulations, integrating Building Energy Management Systems (BEMS) and AI, particularly Artificial Neural Networks (ANN). AI aids in predicting occupancy, life cycle cost analysis, material selection and lighting system optimization. The findings suggest a 25% reduction in energy consumption and a 20% decrease in carbon emissions, with an expected 5-year payback period for retrofitting investments. The results emphasize the potential to convert ageing buildings into energy-efficient assets, urging the widespread adoption of sustainable retrofitting practices and advanced BEMS technologies.

WATER PROJECT

To address the water shortage issue in our NITT campus, particularly the hostel zones, we are working on finding solutions that will help us ensure an uninterrupted water supply to all zones of our campus.

INITIATIVES

CLUB WEBSITE

We have designed our club website so students can follow up on the latest club activities, such as events, workshops, and blogs. The website will be live by May 2024.





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Foreword from the president

It is with immense pride and gratitude that I introduce Delta Force, a tightly-knit community of programming enthusiasts. Delta has once again taken up multiple initiatives and projects, reviving the coding culture and showcasing the team's dedication and passion. The team's exceptional skills, talent, hard work, and commitment have undoubtedly contributed to our success, earning Delta the reputation as the premier programming club. I extend my heartfelt thanks to each team member for their contributions, which have been the cornerstone of our achievements.

Projects and Initiatives

Mess allocation

Performed monthly mess allocation and site maintenance.

Halls Booking

Implemented a digital system for hall booking on campus, thereby eliminating the necessity for paper forms and signature approvals.

Scholarship Portal

Maintaining the core functionality of the site, Assisting the admin with accessing and changing the included data, Added features for RECAL scholarships.

D_{Pay}

We developed and maintained an app and website to facilitate payment transactions for stalls at the Festember 23, Pragyan '24 and NITTFEST '24 fests. The app and website replaced the existing Foodcards and ensured safe execution of transactions during the events. The development of this platform aimed to simplify and streamline the payment process, making it more efficient and secure for stall owners and customers. The app and website were designed with advanced safety features to ensure secure and reliable transactions. Overall, the implementation of this platform was successful, and it played a crucial role in ensuring smooth payment transactions during the fests.

D_{WOC}

Delta Winter of Code (D_{WOC}) is an open-source initiative by Delta Force, the official coding club of NIT Trichy. It serves as a platform for developers, whether novice or expert, to make open-source contributions. D_{WOC} aims to instil open-source culture, provide exposure to industry standards, and help developers hone their skills. Interacting with mentors exposes participants to real corporate workflows, fostering professional growth.

Fest_{API}

Fest_{API} is engineered as a unified API to serve all college fest websites and applications, including fests like Nittfest, Festember, and Pragyan. It seamlessly orchestrates a wide array of fest-related functionalities, encompassing leaderboards, event and workshop registrations and accommodation bookings across various digital platforms.





Festember '23

- Create a unified place for all Festember related info to be published - Festember main site
- Enables proper registration and tracking of the users
- Created a QR code system for distributing T Shirts
- Allotted rooms to outside participants - main site
- Created site for Festember inductions activities
- Festember server revamp and hosting
- Festember campus ambassador
- Festember events handling and registration



Pragyan Social Responsibility

Our team organised a workshop on Web Development for high school students located near our college. The workshop was carefully curated to cater to the specific learning needs of the students, and we also offered them a clear path for further development through various learning resources. Number of Participants: 150+

Pragyan '24

- Mainsite
- Inductions Website
- Inhotts website
- Hackathon
- Tshirt Registration
- Sangam
- Ingenium
- Campus Ambassador
- Youth Summit



Attack on Robots

Attack on Robots is a multiplayer resource management game based on strategic city planning. Participants attempt to design safe and secure cities with the available resources and as well as attempt to find weaknesses in other cities. The event had 350+ registrations.





AR - Hunt

AR Hunt is an Augmented Reality based Android treasure hunt game that enables freshers to explore the campus by solving clues and crossing a variable set of checkpoints to discover AR objects within a time constraint. We made it easier for teams of varying sizes (1-4 people) to register, revamped the app's look, and made it faster by downloading 3D models upfront. The app now places objects based on your location, gives better directions, and is more stable overall, requiring only latitude and longitude to add objects. This event had 150+ participants.

Pragyan Capture The Flag

Capture the Flag (CTF) is a computer security competition. It distils major disciplines of professional computer security. Pragyan CTF is a capture the flag event developed completely by the students of NIT Trichy that is open to the entire world. The event had 550+ registrations .

Code Character

Code Character is a strategy game revolving around building maps and attacking bases using characters controlled by code. It supports PvP, PvE modes with multiplayer battles and daily challenges. The game provides a fun platform to exhibit your coding skills along with your ability to come up with clever battle tactics. It received a participation of 200+ users.

Arcadia

Arcadia-Rivals is a strategy-based game where you collect powerful mini-conquerors known as minicons and challenge opponents. Explore regions, unlock minicons with unique abilities, place them strategically in your lineup and engage in epic one-on-one battles to gain as many trophies as possible to conquer the world of Arcadia. Participation: 190

Timewarp

Timewarp is a single-player game wherein you solve puzzles after finding clues by interacting with the map and using your code editor to code your way to the next level. The game's objective is to solve as many puzzles as possible before the event runs out. Participation: 200+

Python Challenge

Python challenge is a small game to create an interest for programming for first years. It consists of a series of simple challenges each teaching something in the world of programming like cryptography, image processing, algorithms and data processing. It consists of an in-house python interpreter running on the web consisting of certain classes and helper functions to solve the challenges. Participants are expected to type code in python and get the answer to each challenge to progress to the next one. Participation: 80+





HackerTalks

HackerTalks is a series of events or online talks that bring together experts, enthusiasts, and learners in the technology field. These talks are designed to explore and delve deep into complex domains such as machine learning, compiler design, scalable web architecture, cybersecurity, data science, software engineering best practices, and emerging technologies.

Code Golf - InhoTTs

Code Golf is a fun and challenging programming competition where participants aim to write the shortest possible code to solve a given problem. The goal is to achieve the desired functionality using as few characters or lines of code as possible, often pushing the limits of language features, clever algorithms, and creative techniques. Participation:80+

Competitions/Hackathons

1. Smart India Hackathon (3x Qualifiers, 1x Finalist)
2. Encryptcon (2x Qualifiers, 1x Finalists)
3. Pragyan Hackathon (2x Winners)
4. TransfiNITTe (2x 3rd Prize, 2x Winners)
5. Flipkart GRID (1x Finalist)
6. Amazon Hackathon (1x Finalist)
7. Web Mosaic
8. Techfest IIT Bombay, Taskwiz Hackathon (1x 2nd Prize)
9. TRI-NIT (3rd Prize) 3x finalist

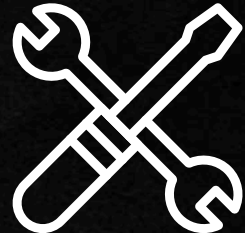




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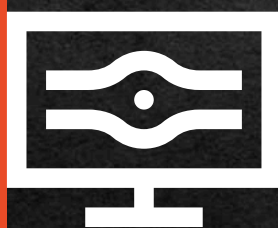
Foreword from the President

We are the Designers' Consortium, a group of forty-one engineering enthusiasts hailing from diverse backgrounds. Our journey began in 2015 with fourteen members and has grown into the esteemed Technical Product Design and Innovation Club of NIT Trichy. Our primary aim is to identify societal and Industrial challenges and provide innovative solutions. We are dedicated to overcoming obstacles, designing solutions that meet requirements, and delivering products that set new standards.

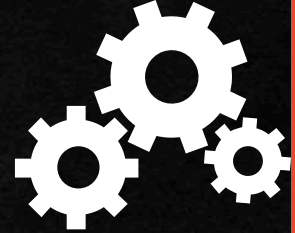
We are also committed to fostering a vibrant culture of product design and innovation within our campus community. Through showcase of the products, workshops, design challenges, we aim to equip our fellow students with the skills and mindset needed to excel in the field of product design.

Projects

In our pursuit of innovation, we have undertaken projects under three major ideas. These projects range from research-based endeavors aimed at conference publications to those designed for competitions like Shaastra and Sangam.



Research Projects



1. Correva:

Designed an underwater ROV capable of deploying and securing nursery-grown coral structures, and extracting samples from diseased coral reefs for laboratory testing.



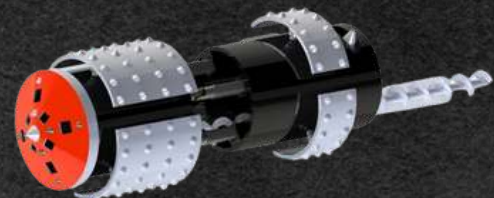
2. MoTra:

Designed a product to transfer wheelchair-bound patients between their wheelchair and bed or chair with minimal assistance.



3. AUROCAL:

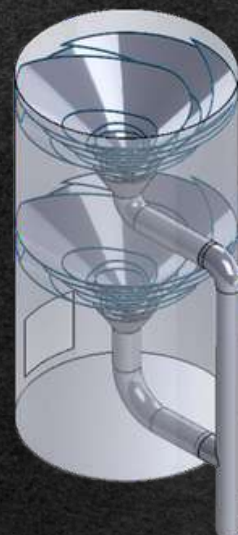
Designed an autonomous, Subsurface cable laying bot assisted by an on-surface detection system.



Shaastra Projects

1. QuadMos:

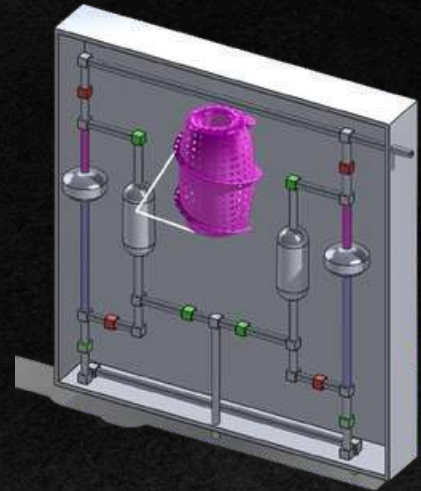
The objective of this project was to design a bio-inspired technological solution to harvest water from air to alleviate water scarcity. This bio-inspired device takes inspiration from various organisms like the Desert beetle, Pitcher plant, Spiral Aloe Vera and geophytes.





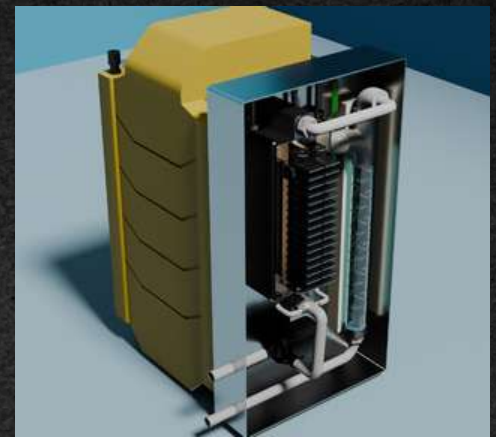
2. Neogenesis:

This project aimed to design a bio-inspired system for extracting CO₂ from atmospheric air in urban buildings. This device takes inspiration from Venus flower baskets which are tubular sea sponges of the Porifera phylum.



3. Ioniflow:

The objective of this project was to develop a cooling technology for large battery packs used in heavy vehicles that have the capability to give better product performance for the same rated output of an electric vehicle. It works on the ionic calorific effect by adjusting the concentration of salts in a working fluid.



4. LeProc:

This project aimed to develop a new and innovative solution that solves the problem of leakage of various hydraulic fluids, such as radiator coolant, in heavy, off-highway machines. This was achieved with a fixed diameter clamp that turns into a constant tension clamp after failure.



Sangam Projects



1. Deterr-Mine:

Ideation, design, and fabrication of a novel shoe sole that detects and protects against landmines. The shoe uses high-level metal detection and classification circuitry to detect landmines. It has an energy absorption layer consisting of custom-made polymers to absorb the effect of explosions and prevent loss of life. A shrapnel shield made of deployable airbags will assist in reducing the dangerous effects of the shrapnel from the explosions



2. VersaStride:

Ideation, design and fabrication of a compact convertible ladder-cum-bridge, portable on shoulder, made for military expeditionary operations. The product employs an innovatively designed mechanism of ropes and pulleys to swiftly convert into a bridge or a ladder by a simple pull of a rope. The tension in the rope is cleverly transformed to offer structural stability.



3. REC-Tube:

TA semi-automated rubber recycling machine that transforms discarded bicycle inner tubes into practical, utilitarian products such as pouches. This compact and efficient system significantly reduces processing time and energy consumption compared to traditional large-scale rubber recycling machinery. By eliminating the need for shredding, granulation, and devulcanization, our solution contributes to enhances resource utilization in the circular economy.



Workshops and Events

To foster innovation and instill product design principles within the student community, we have organized a variety of events throughout the academic year which are as follows.

1. Discover DC:

Discover DC is a yearly session arranged by the Designers' Consortium to inform first-year students at NIT Trichy about DC and similar Tech Clubs. This year, DC members led the event on Youtube, highlighting: the overall club structure at NIT Trichy, distinctions between Tech Clubs, Cultural Clubs, and Social Clubs, insights into DC's activities (such as projects, event timelines, and participation), and addressing doubts and questions.

2. Orientation:

After the new batch joins DC, they undergo an extensive orientation program led by third-year members. This year's program comprised sessions covering topics such as Mechanics fundamentals, Electronics basics, Software training including SOLIDWORKS, Ansys, Matlab, hands-on Tool and Fabrication sessions, and an overview of ML/AI.

3. Brain Freeze:

In partnership with the Orientation Team, DC hosted an engaging session for the 2027 batch. The event commenced with an overview of Product Design, leading into a competition challenging first-year students to devise creative solutions for everyday issues within a tight timeframe. Using only limited components, the 2027 batch had to innovate products to address simple problems, along with sketching a unique multi-purpose product.





4. De-Construct (Inhotts):

De-Construct, hosted as a component of Pragyan's Inhotts on November 19th, explored themes such as reverse engineering, biomimicry, and bio- inspirational design. . An unexpected quiz challenged participants' understanding of bio-inspirational design's role in product development. The event concluded with the recognition of the winning teams, who received prizes.

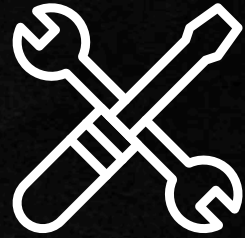


5. TECHIDS:

Techids is a social responsibility initiative organized by Pragyan. Hundreds of students from various schools across Tamil Nadu visited NIT Trichy to gain insights into the realm of technology. . Students engaged with entertaining science projects presented by DC members, inspiring them to delve into the fields of engineering and physics. The session aimed at imparting fundamental concepts essential for product development.

6. Synergy SOLIDWORKS Workshop:

Conducted a 5-hour session in Third Eye covering basics of Sketch, Part Modelling and Assembly. The workshop also included a brief demo of structural analysis in SOLIDWORKS.

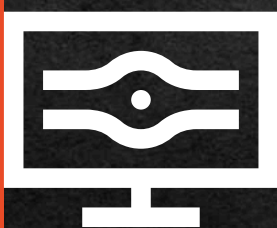


7. CSWA & CSWP - SIMTEK:

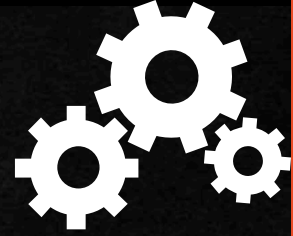
CSWA (Certified SOLIDWORKS Associate) and CSWP (Certified SOLIDWORKS Professionals) is a reputed certification provided by SOLIDWORKS in the field of Mechanical Design. The workshop was held on 2-4th of December by SOLIDWORKS in collaboration with SIMTEK. A voucher was provided to all attendees, using which they can appear for the CSWA and CSWP exam. Furthermore, all registered candidates received license for student version of SOLIDWORKS for a duration of 1 year from activation.

8. Technovation:

Workshop conducted exclusively for first years. The workshop included mechanics and electronics theory, a hands on fabrication session for assembly of rack & pinion based product, 3D CAD Modelling and ANSYS Simulation. It also included the basics of mechanics of machines and Machine Learning.



Achievements



1. Papers Published, ICROM

International Conference on Robotics and Mechatronics is a well-recognized conference organized by the Robotics Society of Iran (RSI) with the support of the Academy of Sciences of IR Iran, and collaboration of related scientific societies. In the 11th fold of ICROM, 2 papers have been published and can be accessed through IEEE.

- Title: Retrofittable Air Cell Cushion for Pressure Ulcer Protection using Piezo-Resistive Pressure Sensing. Authors: Yadhu B., Sanjana C., Raamanujan C., Dharshan S., Chaudhari, L., Dharsini, S., & Maithreyan, G.
- Title: A Bio-inspired Robot for Structural Health Monitoring of Natural Gas Pipeline.
Authors: Sanjana C., Dhanush S., Moksh Jain, & Maithreyan G.

2. TransfiNITTe, NIT Trichy

Annual 42hr Flagship Hackathon of NIT Trichy organized by the Technical Council and SCIEnt.

- First Prize (Boeing Mechanical) - Team Marshalls
- First Prize (Boeing Electrical) - Team CroCADiles

3. Eco-Create MVP, Shaastra, IIT Madras

Eco-create is the flagship design contest in which participants from all over India get to design biomimetic solutions to real-life problems.

Second Prize – Natura Inspirat



4. Caterpillar Industry Defined Problem Statement, Shastra, IIT Madras

This challenge focused on providing solutions to Industrial problems brought up by Caterpillar, India

- First Prize - Ioniflow (Novel EV Battery thermal Management solution)
- Third Prize - LeProC (Innovative Clamp for radiator-to-Engine pipes)

5. Sangam, NIT Trichy

- First Prize (Defence) - Deterr-mine (Novel Mine-detection Shoe)
- Second Prize (Defence) - Versastride (Portable military ladder cum bridge)
- Second Prize (Waste Management) - REC-Tube (Rubber recycling machine)

6. SCIEnT Open House, NIT Trichy

- First Prize - Deterr-mine (Novel Mine-Detection Shoe)



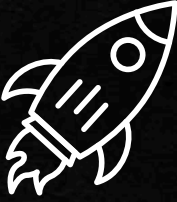


E-Cell
NIT Trichy

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Foreword from the Ex-Comms

In the evolving landscape of the startup ecosystem, India is transitioning from a populace primarily seeking employment to one fostering job creation. At this juncture, characterized by dusk's arrival, it's imperative to proceed with both sharp insight and prudent caution. The global economy throughout the financial year 2023-24 has witnessed significant fluctuations, oscillating between peaks and troughs. It's amidst such turbulence that entrepreneurs and innovators are truly forged.

Recognizing this pivotal moment, our E-Cell underwent a substantial overhaul, redefining the entrepreneurial environment on our campus. We shifted our focus from merely organizing events to becoming a comprehensive support system that nurtures, cultivates, and champions startups from their inception.

Our mission this year has been clear: to stand unwaveringly by every aspiring entrepreneur, providing unwavering assistance in realizing their startup ambitions and turning them into tangible realities.

We extend our heartfelt commendation to every member of the E-Cell for their relentless dedication to our cause and their unwavering spirits. Without their tireless efforts, our team could not have achieved the ambitious goals we set out to accomplish.

Projects and Initiatives

E-Cell Campus Startups:

Campus startups is an initiative wherein we have our E-Cell members as a POC for the startups operating in campus. This helps our members to understand how an early-stage startups operates.

We as E-Cell help them with hiring, finding mentors, publicity, networking with fellow founders and more.

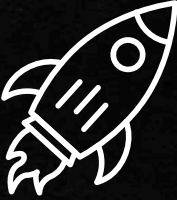
We were in touch with 5 startups and constantly supporting them with their needs.

Along side we also helped our members work on their startup idea.

Pitch Perfect

E-Cell NITT has forged a collaborative partnership with Toastmasters to present "Pitch Perfect," a distinguished event aimed at providing a platform for aspiring student entrepreneurs within the E-Cell community to showcase their innovative startup concepts. Distinguished judges from E-Cell's esteemed panel will rigorously assess the viability and potential of these business propositions, while Toastmasters' expert representatives will offer invaluable insights and guidance to enhance the quality of the pitches.





Event specifics:

Event footfall: 50+

Judge from E-Cell's side: Mr. Shubham Kadm, HPCL, ex-VC intern at Blume Ventures

Number of E-Cell startups pitched: 6

Date: 08/07/2023

TOASTMASTERS
INTERNATIONAL

E-CELL

PITCH PERFECT

LEARN TO CRAFT,
COMMUNICATE AND
CONQUER YOUR PITCH

Saturday, 8 July 2023, 5 PM
Meet Link in Bio!

TM Vignesh
97895 24981

Harshith
90256 49457

TM Manasa
90085 44142

E-Cell Community

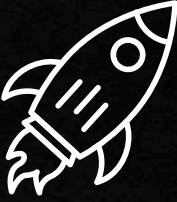
Community project was focused creating an infrastructure for likeminded people to know about entrepreneurship.

Initially we put info creatives on entrepreneurship to create awareness among the community members.

We did conduct Career Spotlight Series, a series for the freshmen to understand different domains which could be explored. Domains like Software, PM, Consulting were covered in the series.

We had the privilege of hosting several distinguished alumni who delivered insightful sessions. Shri Hari L from the batch of 2023, currently at Wells Fargo, led an engaging session on software development. Shivani Chander, from the batch of 2020 and now with Microsoft, delivered a wonderful speech on product management. Karthika, from the batch of 2022, provided an impactful lecture on the world of consulting, drawing from her experience at EY





Apart from this we conducted workshops on Resume building session and LinkedIn profile optimization in Orion for our community members.



E-Cell Team Upskilling

It's crucial for the team to engage in upskilling to enhance their personal value, which will contribute to their individual growth and propel the team forward.

To support this, we organized a mentorship call with Mr. Mehul Jindal, founder of BharatX and a 2022 graduate, for the student entrepreneurs of NIT Trichy.



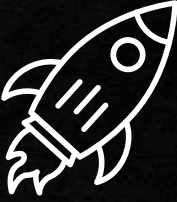
Additionally, Mr. Indresh, a 2023 graduate from NIT Trichy and winner of the India-Singapore Hackathon, conducted a session on how to navigate hackathons and maximize their potential.



InHoTTs'23

E-Cell, in collaboration with Pragyan and The Cognizant (TC), conducted the "0 to 1 Workshop" as part of InHotts'23. This workshop elucidated the comprehensive process of building innovative solutions, emphasizing critical aspects such as design thinking, customer interviews, prototyping, and the creation of a Minimum Viable Product (MVP).





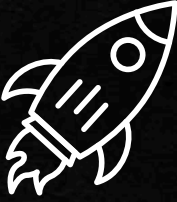
Attended by over 50 participants, the workshop underscored the significance of these foundational elements in startup development. It was facilitated by Gaurav Kumar Tiwari and Ritu Raj, student founders of Finstox, who brought their practical insights and experience to the session. The event aimed to equip budding entrepreneurs with the essential skills and knowledge required to transform an idea from inception to a viable product, thereby fostering a robust entrepreneurial mindset among the attendees.



Ideathon'23

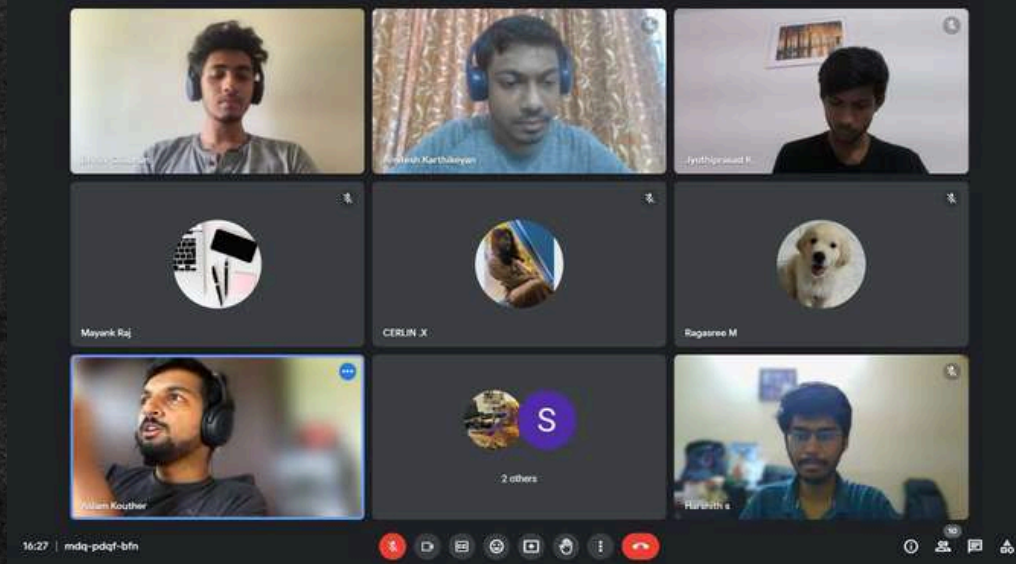
Instead of the traditional induction process, we introduced Ideathon'23, an event focused on product development within a span of two days. Held in LHC 5 and 6, the ideathon was attended by over 60 teams. Throughout the event, participants engaged with real-time customers, gaining valuable feedback and insights. At the end of the two days, each team presented their ideas with a pitch deck, showcasing their progress and innovative solutions. This dynamic approach not only fostered creativity and collaboration but also provided participants with hands-on experience in product development and customer interaction.





E-Cell Project: D2C Startup

We sourced a project from our alumnus, Mr. Aslam Koucher, aimed at transforming his business into a startup. Our team worked in two verticals: one focused on listing products on quick commerce websites and the other on establishing a digital presence, including creating a website for the brand. This comprehensive project spanned four months, during which our team diligently worked to deliver all the required outcomes. Ultimately, we successfully completed the project, meeting all the deliverables and significantly enhancing the business's startup potential.



Headstart

Headstart is a pre-incubation program for the students of NIT Trichy to provide them with mentorship and support for a period of 6-8 weeks and enable them to develop a solid business model and a minimally viable prototype. This program is envisioned as a program to provide a startup experience to the students and to enable them to build from 0 to 1.

We provided them with resources, mentorship, and opportunity for them to take their startup to the next level.

We conducted weekly sessions on various facets of entrepreneurship including business model development, building an MVP, approaching customers and clients etc.

We also provided them with one-on-one mentorship to personally help them build their startup.

HEADSTART'24
Presents
**IDEATION & DESIGN
THINKING**

JOIN US!

ABHISHEK ARJUN
FOUNDER, PAYBUX

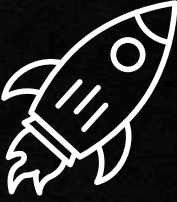
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**E-CELL
NIT TRICHY**





E-Summit

E-Summit is the annual flagship event of our organization, which brings together aspiring entrepreneurs, industry experts, and business enthusiasts from all over the country.

This year, we curated an exciting lineup of events and activities to inspire, educate, and challenge young minds to think creatively and innovatively.

DAY 0

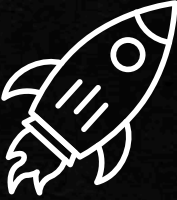
Day 0 at E-Summit'24 kicked off with an inspiring inauguration ceremony! Honored to have Dr. Srinivasan Sundarrajan, former Director at NIT Trichy and Education Advisor at GITAM University, deliver an enlightening guest lecture. His talk on 'Transforming Challenges into Opportunities in the Disruptive Age of Entrepreneurship' left us all motivated and eager for the days ahead.



DAY 1

Day 1 at E-Summit'24 began with an inspiring online guest lecture by Yashish Dahiya, where he shared his entrepreneurial journey. The day continued with a product management webinar by Doremon Den, followed by Anand Srinivasan's insightful talk on 'Navigating Entrepreneurship.' We wrapped up with a lively fireside chat featuring Shark Tank contestants Abhishek Acharya, Manoj Sanker, and Devesh Bochre. Truly a day filled with wisdom and inspiration!





DAY 2

Day 2 of E-Summit commenced with a case competition sponsored by Good Gum, judged by its founder, Mr. Mayank. The competition attracted numerous participants, including many from outside NIT Trichy. Following this, we had a keynote session by Mr. Navneet Misra, a serial entrepreneur and NITT alumnus from the batch of 2007. To conclude E-Summit, we held our pitching competition, Breakthrough, which saw over 30 participants showcasing their innovative ideas.

The poster features the following text and graphics:

- Logos for E-CELL and NITT at the top left.
- A circular logo with the number '78' at the top right.
- Text: "E-SUMMIT '24" in a bold, sans-serif font.
- Large, stylized text: "KEYNOTE SPEAKER".
- A purple box on the left containing the text: "Guest Lecture", "On the topic: Entrepreneurship and his Journey".
- A portrait of Mr. Navneet Misra on the right side.
- A purple banner at the bottom left with the text: "GJCH CONF HALL-2", "14TH APRIL, 02:30 PM", "Mr. NAVNEET MISRA", and "Founder, Entrepreneur, Investment Partner at The Barbershop, EIR- Bombay Shaving Company".
- Decorative elements include yellow stars and a dotted pattern.

Epilogue

As we draw the curtain on this previous chapter, we reflect on the strides we have made in fostering a vibrant entrepreneurial spirit on our campus. From insightful workshops and dynamic ideathons to transformative projects and inspiring sessions with industry leaders, our journey this year has been nothing short of extraordinary.

We extend our deepest gratitude to every member of E-Cell for their relentless dedication and unwavering commitment. Your efforts have been the cornerstone of our success, and your passion has truly ignited the flame of innovation and entrepreneurship at NIT Trichy.

To the next batch of leaders, we pass the torch with great pride and confidence. May you continue to elevate entrepreneurship on our campus, pushing boundaries and breaking new ground. Embrace the challenges and opportunities that come your way, and remember that you are the catalysts for the future of innovation.

All the best as you embark on this exciting journey. We believe in your potential to inspire, create, and lead. Here's to the future of entrepreneurship at NIT Trichy—brighter and more dynamic than before.





Electric Vehicles & Energy Resources

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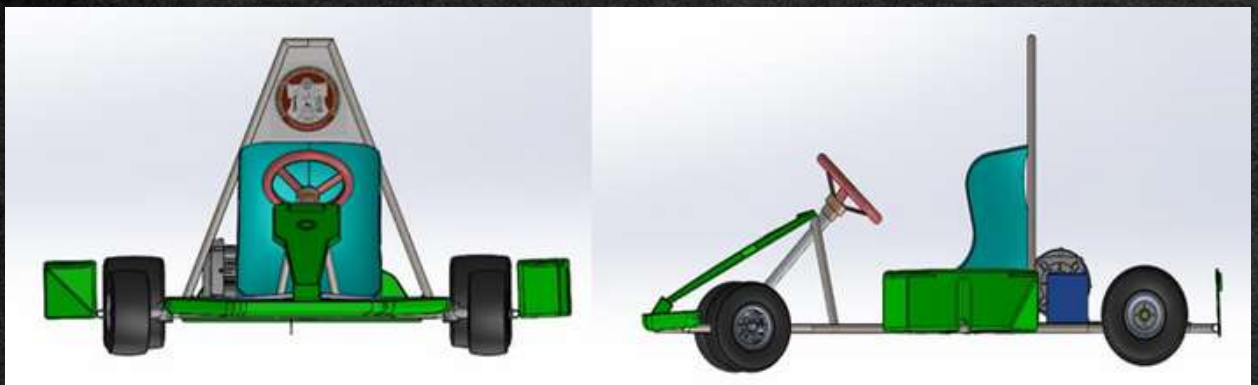
FOREWORD BY THE PRESIDENT

EVER Club has significantly improved compared to previous years. We have conducted guest lectures, EV demonstrations and organized workshops on preventing battery burnouts. Additionally, we participated in various competitions and hackathons, achieving success in some and not placing in others, all of which are summarised in this annual report for 2023-2024.

Projects and Initiatives

National Electric Kart Championship (NEKC) – Season 4.0

NEKC, India's best and biggest electric karting event, has successfully completed three seasons, and we are eagerly participating in Season 4, Organized by Credible Future India Private Limited. It promotes eco-friendly vehicle fabrication, sparks innovative ideas, showcases student talent, and enhances managerial skills. It's a platform for awareness, innovation, and national contribution.



We are building an electric kart from scratch, involving design, calculations, and various simulations on both the battery and vehicle chassis, as well as manufacturing. We encountered numerous challenges in the design process, material procurement, and part acquisition, given that this is our debut competition and we are experimenting with various aspects. Below are pictures of the designs and the manufactured chassis. We aim to complete the vehicle chassis, wheel assembly, axles, and steering by the end of this academic year.

As informed by Credible Future India Private Limited, the NEKC Season 4 competition was cancelled due to unforeseen circumstances.

SMART INDIA HACKATHON

The prestigious Smart India Hackathon has provided opportunities to Pan Indian institute dedicated for science and engineering. The has rigorous selection procedure to pass for final stage. In 2024, only two teams participated for SIH final round and one of the team is 'Ferrite Core'. As the name suggests the team was given the problem statement regarding the IoT technology implementation on coal transfer observation. The team had put in their best and received second position in all over India, The autonomous team and design team members dedicated their time with novel products to solve the problem statement accordingly. By supporting their success, EVER wants to move further with this amazing technology.



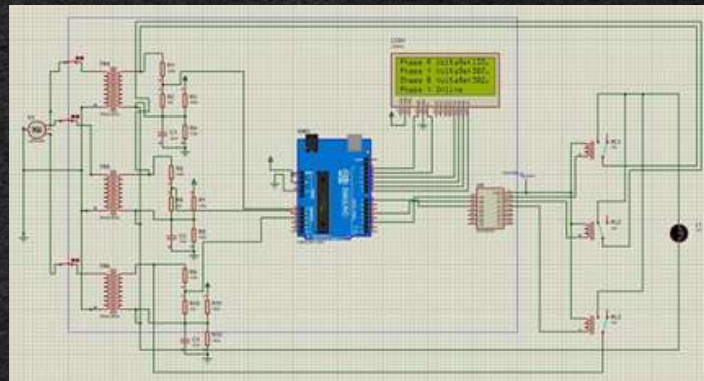


TRANSFINITTE

Team-1: Auto selection of Available Phase in 3-Phase Supply System

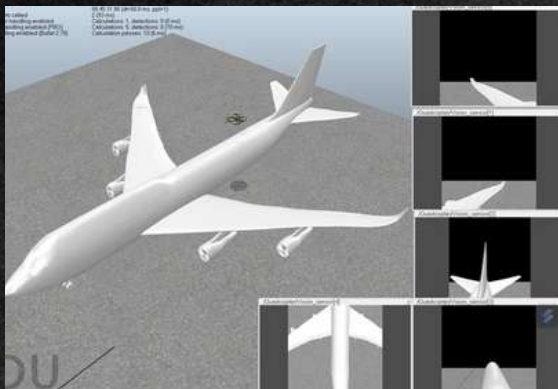
Solution: Using a single phase transformer for each 3 phase, the team was able to find the optimal circuitual solution for this problem statement. Using the 3 phase solution was evaluated by disconnecting manually and then automatically a phase from the connection hub.

Result: Winner for the specific problem statement.



Team-2: Skin Defects visual inspection by drone

Solution: We propose the deployment of a drone capable of autonomously exploring the aircraft body and detecting defects using an ML-based approach. The application of traditional wall following algorithms for the drone to explore the surface of the aircraft. Approach is designed to work irrespective of the model of the aircraft or its orientation. Result: Hardware statement, 2nd Prize



Team-3: Loss of bolt preload in composite joints

Solution: To develop an analytical approach to predict loss of bolt preload in composite joints. The Analytical approach required a pre-designed model of composite joints and with that the force propagation during the turning of bolt has been seen. As the exerted force reacts on the joint the analysis comes to a heat map on how the force has been distributed.
Result: No place

SANGAM

Autonomous waste collection BoT

Solution: The problem statement was concerned with the environment sector. Using autonomous technology the bot can detect the waste product and take action on how to dispose of it to a certain area.

Guest lecture and EV demonstration by Sushil Reddy:

We conducted guest lectures with Mr. Sushil Reddy, the mastermind behind the Sun Pedal Ride and a bonafide Guinness World Record Holder for his epic solar bike odyssey across India. In this guest lecture, he shared his wonderful experience of riding an electric vehicle across India and also conducted a small demonstration of how an electric car functions with his car which he made the World Record.





CELL LOGIX WORKSHOP

A workshop was conducted on Preventing Battery Burnout with 2 hours of lecture and 1 hour of practical demonstration. Workshop on understanding the working of EV batteries. At the end of the workshop, the participants were able to interpret how EV batteries work, why EV batteries are burning, what is SoC, how to measure SoC parameters, and how to collect battery data using simple equipment. A small demonstration of IoT-based battery data collection was conducted at the end of the workshop.



BLOGS

We have also started our monthly blog series where we will be releasing a blog each month for our publicity and our ideas to be sharpened even more. Our 1st blog dives into the world of autonomous vehicles, exploring how these futuristic vehicles learn to navigate the road from super sensors to complex decision-making, and the exciting possibilities they hold. It also explores the challenges of perception, planning, control, legal frameworks, and public trust, that need to be addressed before self-driving cars hit the mainstream.





GRAPHIQUE

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FOREWORD BY THE PRESIDENT



In our report for 2023-2024, we aim to record the substantial progress we've made in cultivating a dynamic design environment across the five most reputed domains of design - UI/UX design, 3D art, Graphic design, Digital art, and Motion graphics. Our actions have boosted interest and participation in these areas. Through posts, events, workshops, competitions, case studies, and real-life problem-solving. Our workshops have also fostered practical design skills and an appreciation for aesthetics, essential in today's visual world. Beyond serving the student community, we've supported the Administrative body and RECAL. Our creative design solutions have improved communication and representation. Our goal is to cooperate with as many technical clubs as possible, exploring potential collaborations between Graphique, these clubs, and the Technical Council. As the president of Graphique, I am excited about the future and the potential it holds for our team and our college.

Admin and RECAL Projects

ADMIN PROJECTS

Meeting administrative needs for institute design specifications.

1. NITT Golden Jubilee logo Redesign
2. Steel Technology Course Brochure Design for the Department of MME
3. MA English Admissions Brochure Design for the Department of Humanities
4. SBI Debit card + ID Card Design
5. Institute Flip book Design
6. Research Project Reveal Video for the Department of MME
7. Institute Day Achievements Report Cover Design
8. Senate Meeting Notes Book Cover Design

RECAL PROJECTS

Addressing the needs of RECAL and the alumni network for their specific requirements.

1. Poster for announcing a Speaker (Mr. Thiru Arunachalam-1997 Mechanical batch) session and for circulating it in mails.
2. Flyer with RECAL logo and guidance Tamil Nadu logo for a meet and greet with Vishnu Venugopalan - IAS, MD and CEO of guidance for July 10th.
3. Posters showing the instructions for registering on the alumni portal
4. A poster designed to congratulate Mr. Badrinarayanan on receiving a state award.
5. A poster design for the Guest Lecture with Dr. Girish Namboodiri, ISRO as a part of Orientation '23.

Campus Development Initiatives

GRAPHIC BY GRAPHIQUE

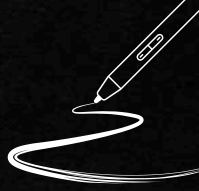
“Graphic by Graphique” is a three-day workshop conducted by Graphique in collaboration with Aaveg. Over the course of three days, the newcomers were comprehensively taught graphic design skills using Adobe Photoshop and Adobe Illustrator, with mentorship provided by our club members

DESIGN-XPERIENCE

“DesignXperience” is a three-hour workshop followed by a 24-hour competition. This event was conducted by Graphique as part of InHOTTs '24 in collaboration with the Technical Council, exclusively for freshers.



CHROMA



We teach students about traditional paper art and its conversion into digital artwork. In the process, we also delve into the technicalities of the necessary software. This workshop, lasting about three hours, is followed by a two-day competition. We collect submitted artworks from the students and select the best two in both categories - traditional art and digital art. The winners are awarded with exciting gifts

UI/UX WORKSHOP

"Fifty Shades of Figma" was a two-day UI/UX workshop conducted by the UI/UX team of Graphique for all students at NIT Trichy. On the first day, the participants learned about website design fundamentals such as color theory, typography, hierarchy, layout and placement, among other foundational concepts, through a practical approach.



CLUB PROJECTS

RE-POST SERIES

The Re-post series was an initiative designed to spotlight the evolution of our junior designers. We revisited their past projects, celebrating their ascent to senior designers after a rigorous academic year brimming with exceptional projects and the exploration of new art styles. The central aim of this project was not only to offer our designers exposure on social media but also to nurture their design passion. Furthermore, this initiative reinforced their confidence, encouraged self-reflection on their growth, and stimulated their commitment to continuous learning and development in the design field.

PROJECT KALEIDOSCOPE

Project Kaleidoscope was an introductory project for the 2026 batch shortly after their induction into Graphique. The project involved creating an artwork that falls under their specific domain. Each artwork had to incorporate one prompt from two categories: locations and art styles. The artwork should depict the culture, specialty, uniqueness, etc. of the chosen location using the selected art style. The new batch worked in pairs to create and submit an artwork by the end of the two weeks.

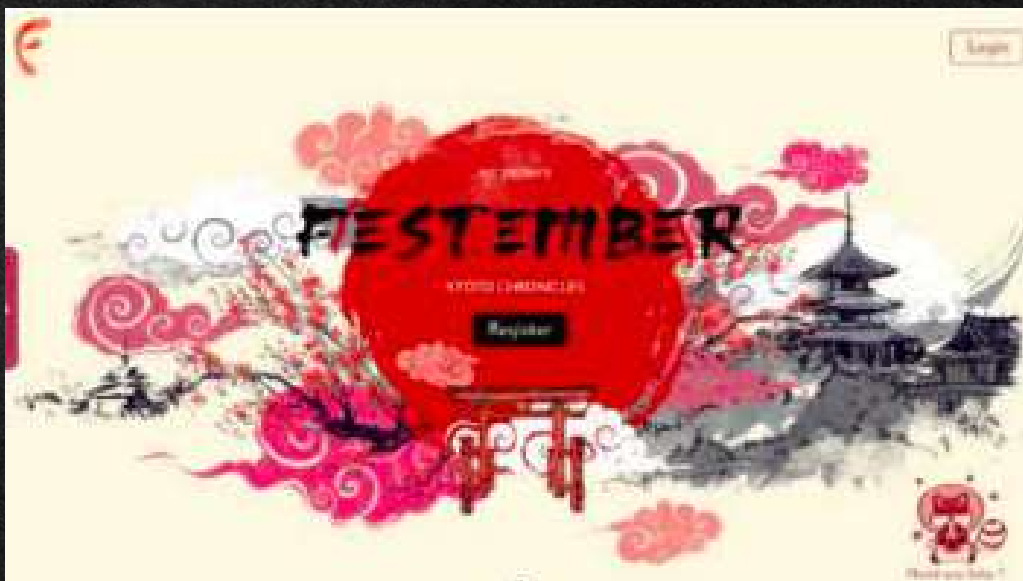
INKTOBER 2023

Inktober is an international design challenge. Participants are tasked with creating an ink drawing or digital art each day throughout October, following a list of prompts released every year. These works are then shared on social media. Our club members, who specialize in digital art and graphic design, successfully created artworks based on the prompt list, leading to the successful completion of Inktober 2023. Designers from other domains like UI/UX participated in the 30 Days of UI Challenge alongside the other designers during Inktober.



FESTEMBER OFFICIAL WEBSITE

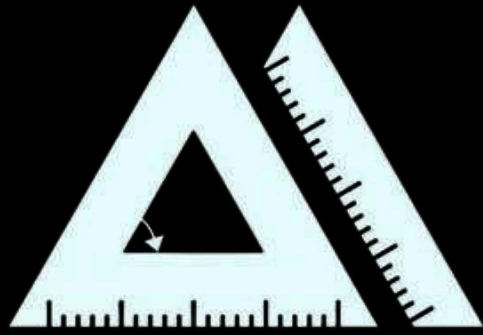
The Festember 23 website was the go-to destination for attendees, providing a comprehensive guide to all festival happenings. From event schedules and venues to guest lectures, pro shows, informals, and workshops, it offered a detailed overview of the festival's diverse offerings. Additionally, the website showcased the dedicated team members who orchestrated the festival's success, fostering a sense of community and collaboration among attendees.



PRAGYAN OFFICIAL WEBSITE

The Pragyán 24 website served as the primary hub for attendees, offering an extensive resource for all event-related information. It provided a detailed rundown of the festival's activities, including event schedules, venue details, guest lectures, pro shows, informals, and workshops, giving a comprehensive overview of the fest's diverse offerings. Moreover, the website highlighted the dedicated team members responsible for orchestrating the festival's success, fostering a spirit of community and collaboration among attendees.





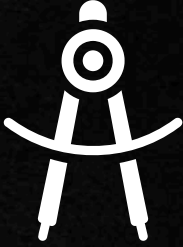
Maximus

MATH SOCIETY OF NITT

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Initiatives

1. Uploading of Lecture videos on Maximus YouTube channel on different mathematical topics

We have started the initiative to deliver YouTube lectures on various mathematical topics which includes both pure or application based like Transforms, Vectors, Complex Analysis covering the curriculum of Engineering Mathematics also. We will also indulge in delivering lectures on How to Use Math based software like Scilab and MATLAB for students.

2. Allotment of some students (B. Tech and PG) under the Math Faculty for research project work

Writing of one research paper is going on. We made a sub-team in our club for research in mathematics purposes. We spoke to numerous Faculty of the Department of Mathematics to allocate some of the students under them or any PHD scholar to work on some projects or on some calculations. Two members, Nikhil, B. Tech 2nd year and Abhisindh, PG Math 1st year, were allotted under the Professor Dr. T.N. Janakiraman for the topic Comfortability index or social network analysis and have started writing result also on a research paper.

3. Development of Maximus website and work on ML, OpenCL

We have started giving some software related projects to some members so that in future they come up with some interesting applications of computers in Mathematics and help with research related work also. We started building our own Maximus Website. We also discussed the initiative to build our own mathematics tool like MATLAB which could enhance some existing features and also be helpful to Research scholars for their work on calculations and graphical analysis.

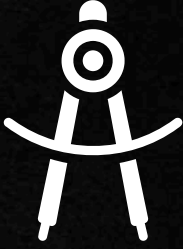
4. Uploading of mathematical content on Instagram

We have been continuously uploading various content on Instagram from last 1.5 years. Several posts on Vedic Maths, Ancient Indian Mathematicians, on various topics like dimensions, famous constants, memes etc. have been posted to attract the NITT and non- NITT audience towards interesting Maths and facts.

5. Posting of Blogs on mathematical topics on Medium

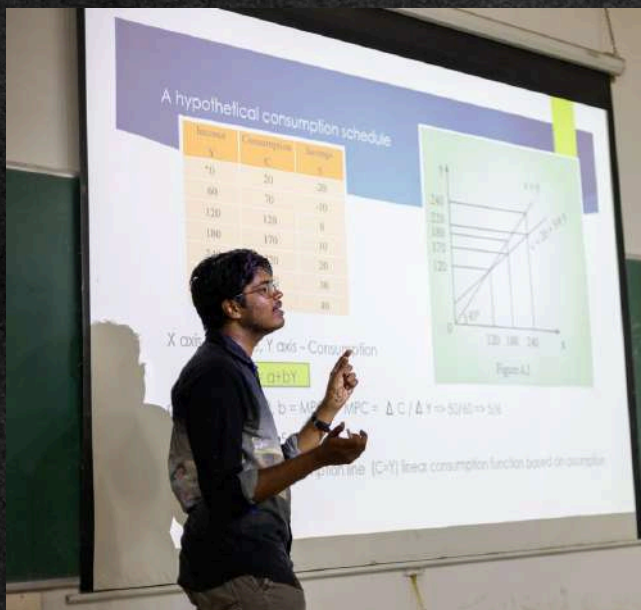
We have started writing 1000 words blog on different topics on medium website.





6. Participation in national and international math competitions and Olympiads

IGMO (International Gamma Math Olympiad) is an international Olympiad for math enthusiasts happening in June-July every year. Every year few members from our club participate in these competitions and also go to the final round. This is completely online and free. Similarly, RNMC (Ramanujan National Math Olympiad), ANMO (Aryabhata National Math Olympiad) organized by AICTSD every year for the Indian students of any age up to 28-29 years are there, and few members have registered for these competitions happening in May.



Maximus
Presents
ARITHMETIZ

Maths Mania

- Workshops
- Quiz events
- Seminars
- Guest Lectures

April 6-7th

Ayush Agarwal +9170623 55927

Events

COGNIFY 2024 (January to March)

A series of Aptitude exams were conducted once every week on Sunday. 900+ students from NITT and non-NITT joined and participated. A total of 6 exams were conducted through google forms.

Arithmetiz Event (Conducted on 6th-7th April)

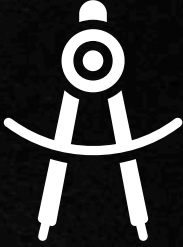
Three competitive events for NITT students were conducted –

- a) Enigma Trifecta
- b) Cerebral Math quest
- c) Escape Room.

• Two workshops were conducted –

- a) Solving ODE using MATLAB by Anjeet Kumar, online through YouTube Livestream
- b) Macroeconomics and Finance Math by Vignesh and Joyantika, which was offline and happened in Orion





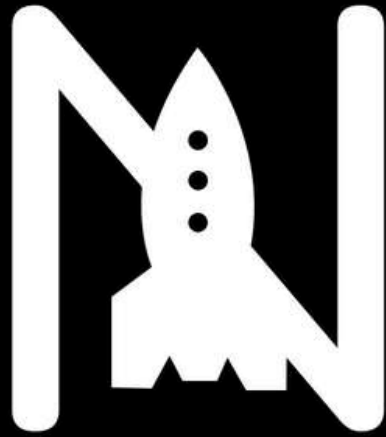
Two seminars were presented in Orion by our research team members –

- a) Mathematics and Voting by Aman shree
- b) Social Network Analysis by Nikhil and Abhisindh

Participated in **Open House** conducted by Pragyan x Scient 2024.

Presented some unique math applications and possible projects for future.



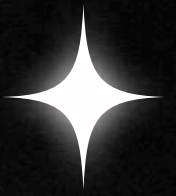


NAKSHATRA
THE ASTRONOMY AND SCIENCE CLUB

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PRESIDENTIAL NOTE

Nakshatra is the official Astronomy and Science Club of NIT Trichy. We are a group of enthusiasts who publicize and foster astronomy among school and college-age students. Our work involves both creating a local platform where people interested in astronomy can interact with the best in the field as well as generating relevant content about events and phenomena in astronomy and astrophysics.

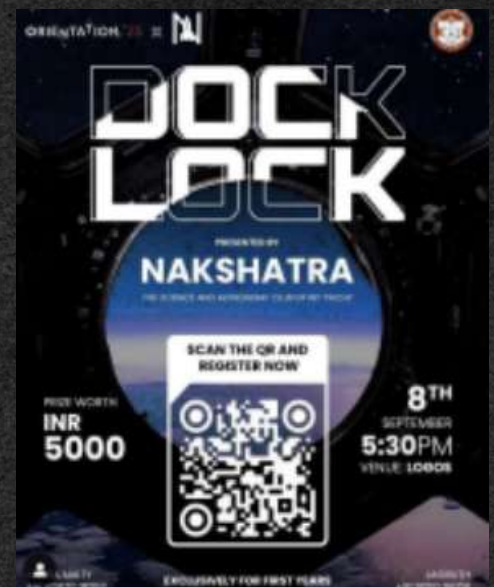
We have recently started delving into the technical domain of astronomy, which covers the software and hardware as well as miscellaneous domains containing telescope building, theoretical study, etc.

- Harshith Ghantasala
President, Nakshatra'23-24

EVENTS ORGANIZED

Dock Lock

It is an event organized by Nakshatra in collaboration with Orientation'23, with 1st-year students as the target audience. This event gives the students a simulation experience of docking a space capsule and piques their interest in space.



World Space Week

Nakshatra annually celebrates World Space Week in collaboration with Pragyan'24 from October 4th to 10th to foster the student community's interest in astronomy and science. As part of this year's WSW, the following were conducted.

Events:

- **Asteralyse:** An event to improve analytical knowledge in the field of space technology.
- **Starventure:** An event to pitch start-up/business ideas in the field of astronomy.

Guest lectures:

- **Dr. Tirtha Pratim Das**, Director of Space Programme @ISRO on Dark Matter
- **Mr. Jijith Nadumuri Ravi**, Founder of Dharma Digital & Ancient Voice on the Connection between astronomy and Mythology.



InHoTTs

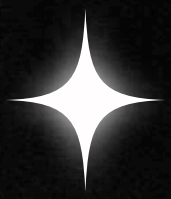
In collaboration with the Technical Council, Nakshatra has organized a workshop as well as an event during INHOTTs'23-24 for the first-year students at our college.

- **Space drive:** Participants are required to develop a data analytical method for predicting the minimum orbit intersection distance between Earth and asteroids using the Asteroid Dataset. With the increasing concern about potential asteroid impacts on Earth, it is crucial to accurately assess the risk posed by Near-Earth Objects (NEOs) and identify asteroids with orbits that bring them close to Earth.
- **Celestial Quest:** It is an introductory workshop to work in the field of astronomy to draw conclusions using astronomical data sets by incorporating AI/ML techniques.



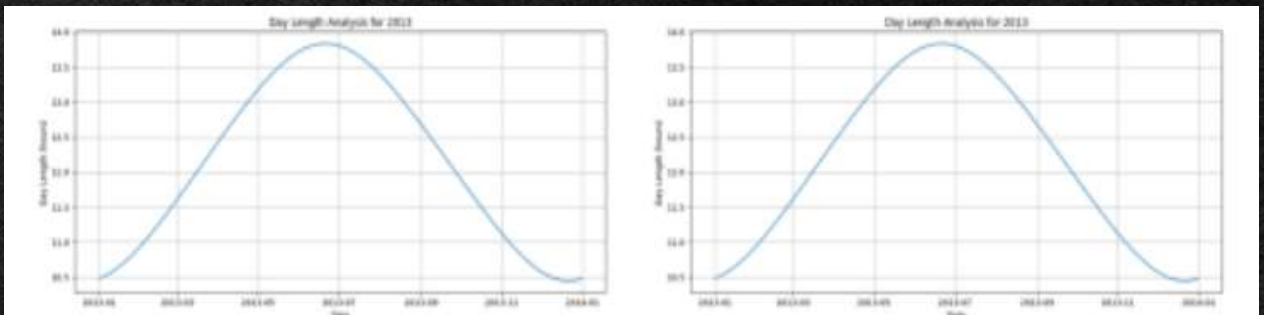


PROJECTS



Sun Pathfinder

This project utilized the SolTrack open-source library to analyze the stability of day length for 20 cities in India over a century. Despite initial expectations of significant variations, the analysis revealed a surprising consistency in day-length patterns across the cities. SolTrack's precise calculations of the Sun's position, including rise and set times, as well as transit times and altitudes, provided accurate data for this study.



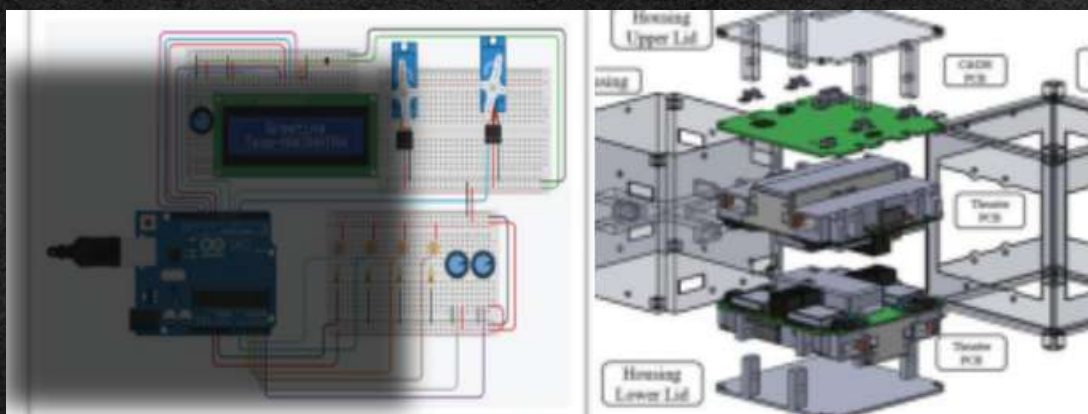
GAN for astronomical Images

By harnessing the power of Generative AI to delve into the depths of the cosmos and create captivating space imagery.



Solar Tracker

A solar tracker is a device that adjusts the position of solar panels to optimize their orientation towards the Sun throughout the day, enhancing energy production. Through continuous tracking, these systems maximize sunlight exposure, improving efficiency of solar panels.



INITIATIVES

Guest Lecture On National Science Day

Nakshatra has organized a GL on the occasion of National Science Day about Surprises from the Sky given by Dr. T.R. Seshadri, Professor, Delhi University.



MoU with Space Zone India Ltd.

Nakshatra signed a Memorandum of Understanding with Space Zone India Ltd. on 24th February 2024 for the improvement of the club in the domain of space technology, especially the Cube-Sat technology.

Informative blogs

- Celestial Highlights: A blog that covers all the major celestial events in the year 2023 around the globe.
- Black Holes: This blog gives an overview of black holes, their types, nature, etc.
- Beyond Our Gravitational Pull: This blog covers the space missions by ISRO.
- OSIRIS-REX's Sample Return: Covers the information about the OSIRIS-REX mission and its importance and impact on humanity.
- Chandrayan-2's Successful Landing: About the details of Chandrayan-2's successful landing on the moon.





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Foreword by the Core

As we embark on another journey through the pages of our annual report, it fills us with immense pride and excitement to reflect on the remarkable achievements and progress made by our club over the past year. It is an honor to witness firsthand the dedication, passion, and unwavering commitment of our members as we strive to uphold the legacy left by our predecessors while pushing the boundaries to new heights.

At the heart of our endeavors lies a profound dedication to the individual development of our members, recognizing that their growth and empowerment are the cornerstones of our community's success. Through a myriad of events, workshops, and initiatives, we have cultivated an environment that nurtures talent but also fosters innovation, and instills a deep sense of purpose among our peers.

One such milestone was our collaboration with WorldQuant, a partnership that brought the fascinating world of quantitative finance to our doorstep. Through a series of workshops and the groundbreaking Alphathon, we not only provided valuable insights into this complex field but also ignited a spark of curiosity and ambition in over 100 research consultants to embark on their journey towards excellence.

Our flagship event, INVESTAS, continues to serve as a beacon of financial awareness, attracting hundreds of students eager to expand their knowledge and skills. With captivating guest lectures, engaging competitions, and informative workshops, we have not only empowered but also inspired the next generation of financial leaders.

Furthermore, our dedication to nurturing talent extends to our first-year students through events like INHOTT'S'23, where we provided a platform for exploration and discovery in the realm of finance. By equipping participants with essential skills and knowledge, we aim to lay a strong foundation for their future success and growth. In addition to our event highlights, we have undertaken ambitious projects such as the Option Pricing Model and FundX, showcasing our commitment to innovation and excellence in the financial domain.

Through rigorous analysis and strategic planning, and a relentless pursuit of excellence, we continue to push the boundaries of what is possible, always with a keen focus on protecting our capital and maximizing returns.

As we reflect on the past year, we are filled with gratitude for the dedication and passion of our members, whose tireless efforts have made all of this possible. Together, we have achieved remarkable success, but our journey is far from over. As we look towards the future, let us continue to uphold the values of integrity, excellence, and collaboration that define our club, ensuring that our legacy endures for generations to come.

Thank you to everyone who has contributed to our success, and here's to another year of growth, innovation, and achievement.



INITIATIVES



FundX

FundX is all about managing portfolios with real money, but it's not public funds—it's our own private stash, purely for learning purposes. When we manage our portfolio, we're into swing trading, chasing stocks with big momentum rather than holding onto them for years. Our main goal? Beating the market index and making some serious returns. And we're in it for the long haul, aiming to grow our fund over time through smart trading & investing.

But it's not just stocks we're into. Our FundX members dive deep into mutual funds, forex (especially gold), and even crypto markets to understand the whole financial markets. We don't just keep this knowledge to ourselves. We run workshops for fellow students at NIT led by FundX members, teaching them about financial markets, investing, and trading. We want everyone to know they can grow their money and build wealth in the stock market, while also being aware of the risks involved. Our brainstorming sessions are where the magic happens. We're always cooking up new strategies to beat the market, debating everything from option trading strategies, best markets to trade as a trader and different averaging techniques.

Stock Research Report

Throughout our tenure, we diligently produced comprehensive stock research reports. Our analysis was done beyond technicals of a stock, focusing prominently on the detail examination of business and financial fundamentals. This approach aimed not only to broaden our understanding of diverse fundamental ratios but also to refine our expertise in stock selection.

Such methodology mirrors the practices employed by esteemed fund houses in curating stock portfolios for their customers.

Option Pricing Model

The project is a real-time comparison tool for NIFTY and BANKNIFTY options contracts using the Black-Scholes pricing model. It fetches live prices from the National Stock Exchange (NSE) and calculates theoretical option prices based on the Black-Scholes formula. Users can input contract's strike and expiry dates for PUT and CALL options to compare actual market prices with the model's predictions, enabling them to make informed trading decisions. This project provides a valuable tool for option traders, offering insights into potential mispricings and market inefficiencies in NIFTY and BANKNIFTY options contracts.

EVENTS

WorldQuant Brain Alphathon

Quantitative finance, often referred to as 'quant finance', combines mathematics, statistics, and computer science with the complexities of financial markets. To cater to the interests of quantitative finance enthusiasts, we at ProfNITT established a groundbreaking partnership with WorldQuant, a leading global quantitative asset management firm, to organize a series of events at NIT Trichy. These events comprised workshops aimed at educating participants about quantitative finance, catering to the needs of individuals intrigued by the field but uncertain of where to start.





The response from participants was overwhelmingly positive and engaging! Attendees actively participated in the workshops led by industry experts Yash Zanwar and Aditya Chaturvedi. They delved into predictive financial models and gained valuable insights into quantitative finance.

The interactive sessions fostered a conducive learning environment, leaving participants equipped with practical knowledge to apply in their future pursuits.

In addition to the workshops, we organized a three-week Alphathon where participants developed their own alphas and competed for BRAIN Research Consultant positions, stipends, and a \$2,500 prize pool for the winner. This collaboration successfully onboarded over 100 research consultants. But our collaboration doesn't end there. It extends its global reach with the inaugural International Quant Championship tournament hosted at NIT Trichy.

INVESTAS' 23

INVESTAS is an annual flagship 3-day event of ProfNITT that includes competitions, events and guest lectures to boost financial awareness among the college students. This year the event comprises two offline guest lectures, demystifying quantitative finance by Ajit kulkarni, Quant risk management and High frequency Trading by Ansh Tayal from National Stock Exchange. The competitions are stock market mingle, a stock market networking event and Iceberg UX case study and bid battles, a bidding competition and a case competition in collaboration with NIT Surathkal.

We also conducted a workshop called Money Matters for the beginners which was conducted by our own club members. We had an overall footfall of around 950 students.

INVESTAS, our annual flagship event at ProfNITT, remains a vital platform for promoting financial awareness among college students. This year's initiatives featured two interesting offline guest lectures, with Ajit Kulkarni demystifying quantitative finance and Ansh Tayal from the National Stock Exchange giving light on quant risk management and high-frequency trading.

Our competitions, Stock Market Mingle and Iceberg UX Case Study, as well as Bid Battles, offered fascinating challenges that encouraged players to successfully apply their financial knowledge. Collaboration with NIT Surathkal for the case competition increased our reach and encouraged healthy competition among students. Furthermore, our Money Matters course, delivered by qualified club members, provided valuable financial management guidance to newcomers.

With an amazing attendance of over 950 students, INVESTAS continues to have a long-term influence on encouraging financial literacy and knowledge among our peers. We applaud our organizing team's efforts in ensuring another successful edition of this groundbreaking event.





INHOTTS

INHOTTS is an event exclusively for first-year students, organized by Pragyan and a technical council. We provided participants with an immersive financial adventure titled “DecisionQuest - A Financial Journey”. This unusual challenge required participants to make financial decisions that mirrored real-world circumstances at various ages or phases of life. Participants considered the associated benefits and consequences for each choice, aiming to maintain a high ‘Happiness Index’ that reflected overall satisfaction. Furthermore, our session ‘Money+Money=Big Money’ presented an in-depth look at the Indian stock market. Participants, led by our club members, learned crucial technical and fundamental analysis skills, allowing them to discover the best stocks for their portfolios. The three-hour interactive event was attended with enthusiasm by 90 students keen to improve their financial literacy.





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Foreword from the Core

We are a dedicated team of students from all years and departments at NIT Trichy, united by a passion for automobiles. This shared enthusiasm fosters a close-knit and highly efficient team, proudly representing our institution as its official motorsports team. Our collaborative approach involves tackling every challenge head-on, encouraging the creative and individual contributions of each member. Our process begins with ideating and designing the ATV, followed by analysis, manufacturing, assembly, testing, and optimization, providing us with invaluable hands-on experience in automotive engineering. We showcase our skills and innovations by participating in the prestigious BAJA competition conducted by the Society of Automotive Engineers INDIA (SAEINDIA).

Events participated

mBAJA SAE INDIA

This year was phenomenal for our team. For the first time ever, we achieved an impressive AIR-2 in the preliminary round of the mBAJA competition. This success was followed by strong rankings in the statics results of phase-2, where we reached the finals in the sales, CAE, and design events, culminating in an overall AIR-5 in the statics category.



A groundbreaking achievement for our team was the ideation, design, and manufacture of a successful 4WD car. This innovative endeavor allowed us to attain higher speed, improved acceleration, and better gradeability, alongside a reduced turning radius and ride frequency. These advancements propelled our performance, resulting in AIR-18 in dynamics and AIR-19 overall.

Rankings

1. Preliminary Round (Phase 1) : AIR-2
2. Overall Statics : AIR 5
3. Overall Virtual Dynamics : AIR 6
4. Overall Dynamics : AIR 18
5. Overall : AIR 19

Events and Workshops

Open House Exhibition

At the Open House Exhibition of Pragyan'24, held on February 23rd and 24th, we showcased our project to a diverse audience, including students, industry experts, and potential investors. We highlighted the key features and unique selling points (USPs) of our ATV, demonstrating its innovative design and advanced capabilities. Our presentation aimed to capture the interest of investors while also inspiring and informing students and professionals within the industry. This platform provided us with a valuable opportunity to display our project and achievements.





Scient Annual Day

During the SCIENT Annual Day conducted on 15th April, 2024, we showcased our ATV, DRT XXIV. We provided an in-depth explanation of our project, detailing its technical specifications and the broader scope of our initiatives, to an audience that included students, alumni, and faculty. Our presentation was well-received, and we were honored to be awarded third place by the jury.

Autorhaphody'24

The annual workshop of PSI Racing, Autorhaphody'24, was held from May 3rd to 5th in collaboration with CRA Motorsports, Fuori Strada Grounds, and SAEINDIA. The event featured four major sessions:

1. The ABCs of Automobiles: This session explored the fundamentals and intricacies of the automotive world.
2. Matlab, CAD & CAE: Participants received hands-on experience with essential engineering softwares.
3. Race Operations with CRA Motorsports: Conducted by Tharun Kumar S., the Director of CRA Motorsports, in which the race operations and careers in the industry was explained. It was also graced by the presence of Kishore M., co-founder of Fuori Strada Grounds.
4. ATV Xperience: Our ATV was showcased and thoroughly explained.

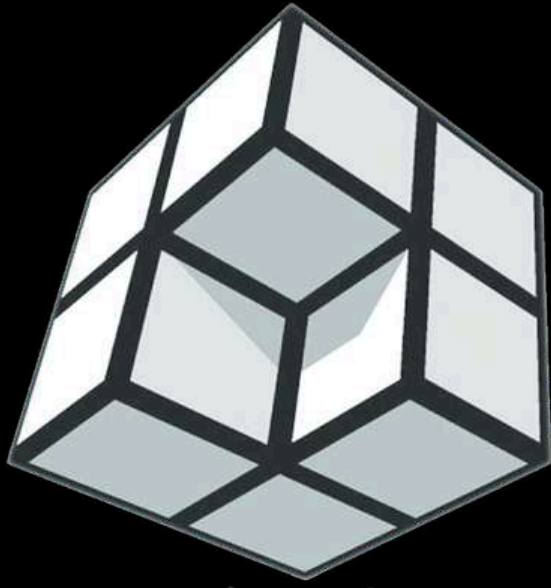
These sessions provided attendees with valuable insights and practical knowledge in various aspects of automobile engineering and racing operations.



Future Plans

Evolving with the times and market trends, our team is transitioning from the mechanical BAJA to the electric BAJA competition, focusing on the design and fabrication of a fully electric ATV. By embracing advancements in EV technology, we are entering a new era of innovation and sustainable racing. This shift not only aligns with global trends towards electric vehicles but also broadens opportunities for a wider range of students, particularly those in circuital branches, to experience the excitement and challenge of creating their own ATV. This strategic move promises to foster greater collaboration, enhance technical skills across disciplines, and drive our team towards new heights of excellence in the field of electric motorsports.



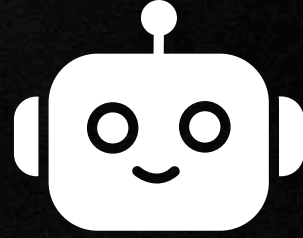


RMI

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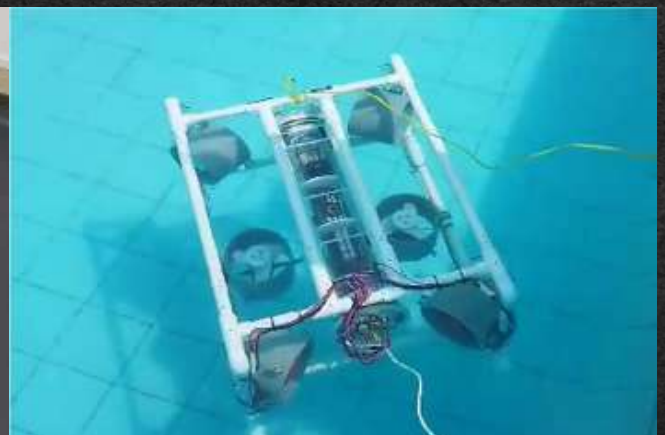
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Ongoing Projects

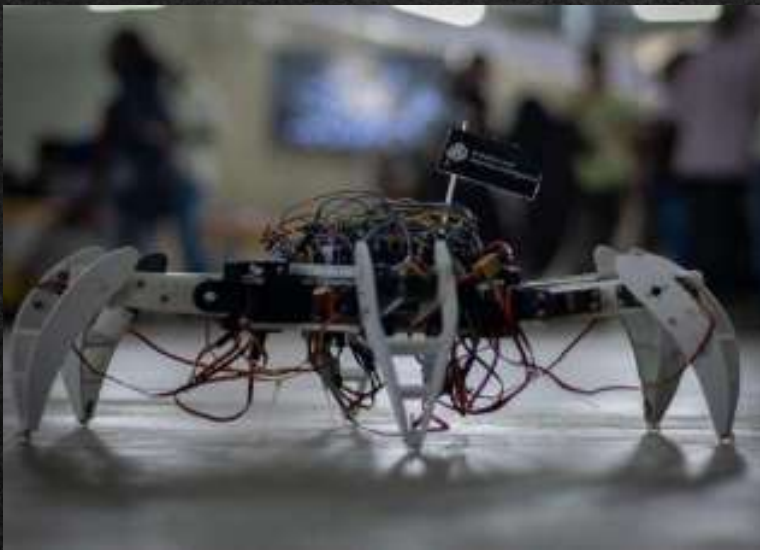
Project ROV

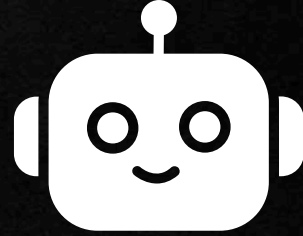
The ROV (Remotely Operated Vehicle) is an underwater robotic vehicle designed for various levels of autonomy, specialised payload testing, and mission execution. It features an open-frame configuration for improved control at low speeds and modularity for different payloads. The vehicle's structure, designed in SolidWorks, ensures stability and positive buoyancy for easy recovery in case of system malfunction. Constructed using 0.75-inch UPVC pipes and fittings, the frame is secured with fasteners. The ROV incorporates sensors like IMU, compass, and pressure sensor for position and heading information used in the PID control algorithm. It can maintain depth, heading, and position, even in the absence of operator input. The hull houses important electronic components such as batteries, power electronics, motor drivers, and processing units. With its versatile payloads, the ROV can conduct intelligence, surveillance, and reconnaissance operations and can also be equipped with mine countermeasure systems for detecting and neutralising underwater mines.



Project Hexapod

Hexapod is a biomimetic, versatile six-legged robot with eighteen actuators competent to manoeuvre dynamically by means of interchangeable gait algorithms for various motions depending upon terrain with ease and controlled wirelessly by a custom-made remote controller for different navigation modes. The project aims to keep pace with current unmanned developments by using the potential of the hexapod due to its adaptability, versatility, mobility, and sensor integration capabilities in defence applications and planetary exploration by traversing challenging terrains on celestial bodies as well as in commercialization.





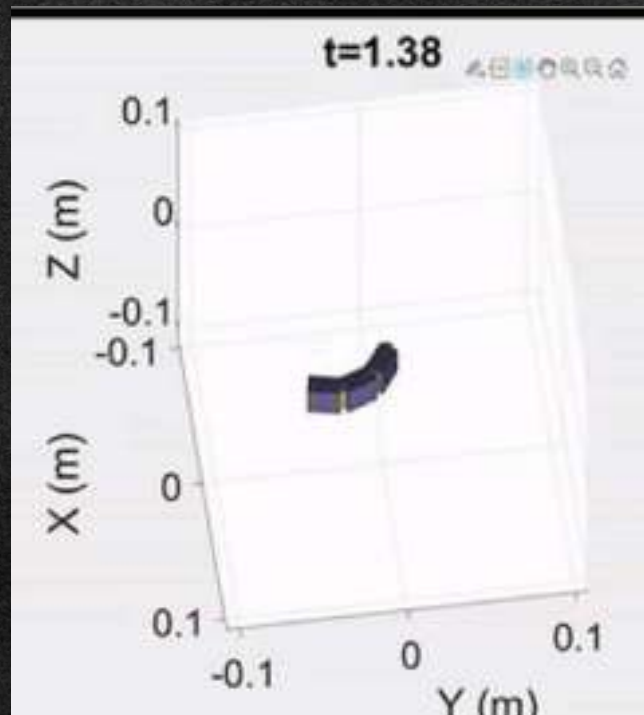
Project Quadro

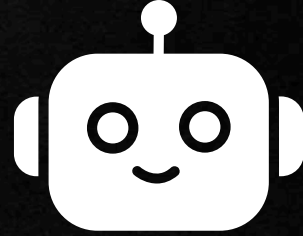
QuaDro is a fully automated quadcopter designed for last-mile delivery in challenging areas. It utilises vision-based position control and GPS for outdoor navigation. The drone has a payload capacity of up to 700 grams, making it suitable for transporting first aid kits and medical supplies. It incorporates LiDAR for obstacle detection and altitude lock for maintaining a specific height above the ground. The drone's key feature is its image processing capability, enabling 3D space location lock and precise landing on an Aruco marker, ensuring accurate positioning and orientation. This comprehensive autonomy makes QuaDro an efficient and reliable solution for autonomous delivery.



Project Soft Robotics

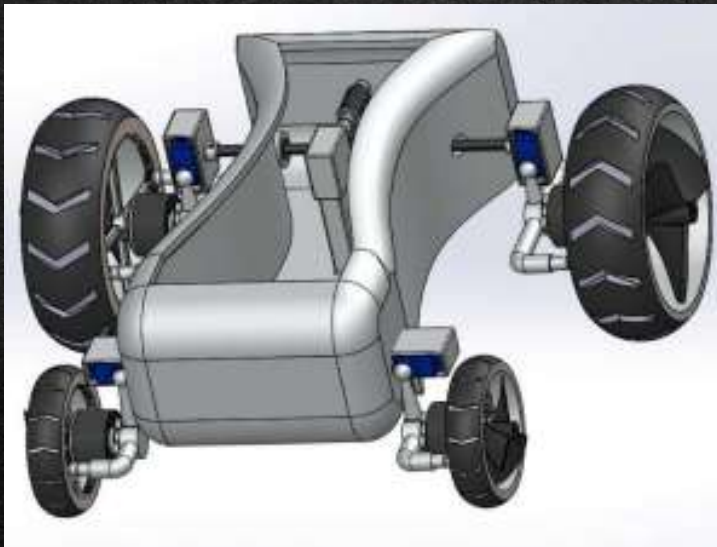
Soft Robotic Gripper is made of flexible elastomeric materials, which have one or more inextensible reinforcement layers that constrain the direction of deformation to achieve the desired motion. This results in fewer limitations in movement, as compared to traditional rigid robots, which are constrained by their single-task programming and rigid materials, limiting their adaptability to changing situations. Our soft robotic gripper is specialized for harvesting fruits and vegetables, thereby contributing to the domain of agriculture, which would benefit tremendously through the aid of robotics and automation.





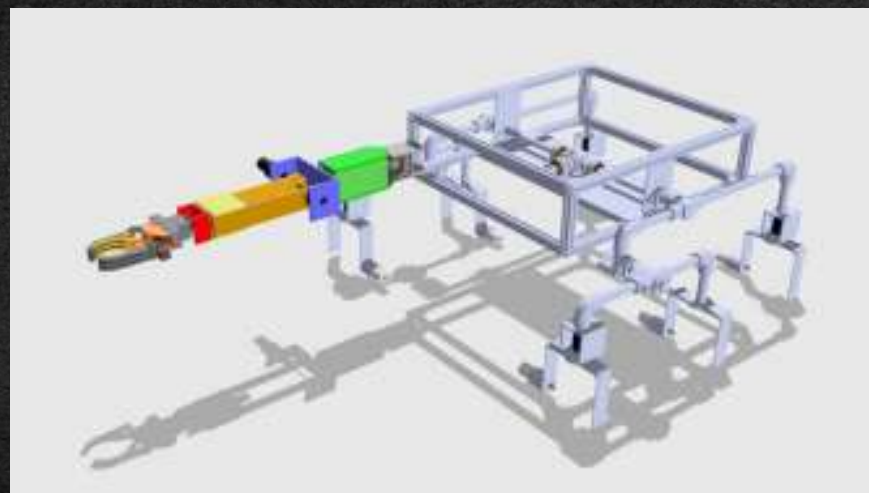
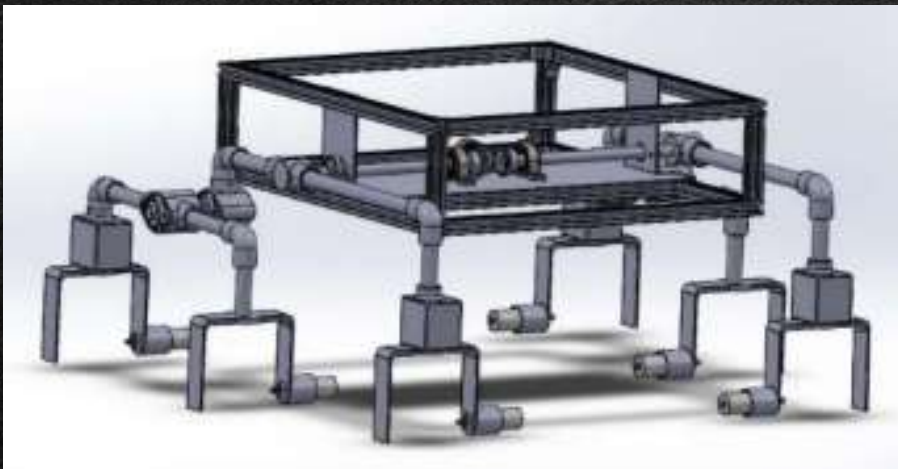
Project Amphibot

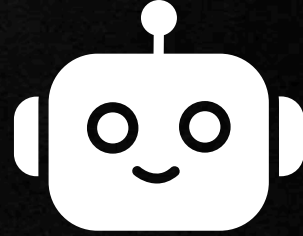
Amphibot is an amphibian robot tailored for military surveillance and inspection missions. It uses a four-wheeled propulsion system to traverse seamlessly on land and in water. Each wheel is paired with a propeller that is driven by the same motor. A clutch mechanism is used to selectively power the wheel or propeller. The robot dynamically changes its configuration to transform into a four-wheel differential drive land robot or an underwater robot as the situation demands. The robot's body houses various sensors such as a camera, depth sensor, leak sensor, etc to help it gather vital data for surveillance and inspection tasks.



Project Virya (Autonomous Rover + Arm)

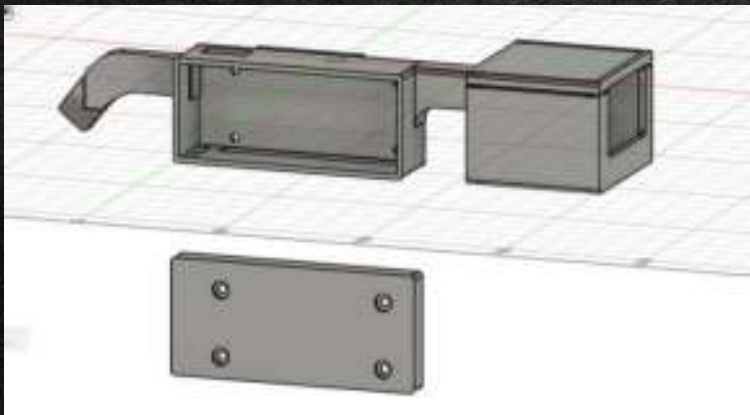
A fully autonomous Rover has been developed as a research platform for studying autonomous ground vehicles and mapping extra-terrestrial terrains, crucial for space exploration. The Rover utilises sensors to navigate unknown environments. To ensure safety of the electronics housed in the main unit, a Rocker-Bogie suspension system has been implemented, allowing all 6 wheels to maintain contact with the terrain. The Rover's dynamic capabilities are enhanced by the independent movement of the left and right wheels. The arm attached to the rover allows for manipulation to sample content from extraterrestrial surfaces. The entire computation for the arm and rover is done onboard the rover.





Project MedVisor

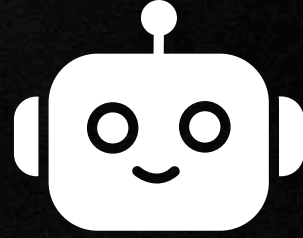
MedVisor is a 3D-printed attachment created for mounting onto any pair of glasses, bringing Augmented Reality to the operating theatre. The attachment enables real-time superimposition of text and instructions onto the field of view of the surgeon, aiding trainee doctors with surgical information that may be required at a crucial juncture. MedVisor can provide critical information such as patient vitals, along with a comprehensive surgery checklist, all controlled using only the surgeon's voice. A voice recognition system using the Porcupine Wake Word engine and Assembly AI Speech to Text (STT) engine allows users to ask questions, converting text to speech in real-time. The text is transmitted over a socket connection to a server running locally on a smartphone, where a response is generated using the Gemini Large Language Model.



Project Swarm

This project aims to develop a novel system for achieving coordinated motion of a group of 4- 6 aerial vehicles with only one central control unit. By leveraging advanced algorithms and autonomous control techniques, the system will enable the vehicles to move together in unison, executing maneuvers such as forward, backward, left, and right movements within a range of 100 meters in each direction. The system will be designed to operate without relying on external controls, ensuring robustness and autonomy in various environments.





Events/Initiatives

INHOTTS

RMI in association with Pragyan InHOTTS, conducted TRACK MASTER, an Inter-hostel robotics contest where Robotic enthusiasts competed to build their own line follower robot. The event was well received by the first years as the event was seen more as a fun gaming event than an intense session, which helped the teams come up with a variety of different solutions. Winners were decided based on the time taken by the bot to fully cover the given path.

Date: 26th November 2023

Place: Orion, NIT Tiruchirappalli

Footfall: 20+ registrations

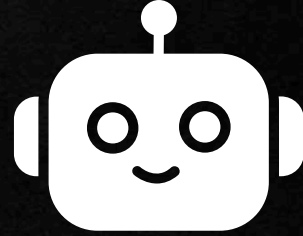


Genesis'24 (Maze Mayhem) - RMI Workshop

Genesis, RMI's annual flagship event, is designed exclusively for first-year students to immerse themselves in the diverse field of robotics. The event acknowledges that these students have limited experience in various domains and aims to provide practical learning opportunities beyond traditional college courses. Genesis spans five days and includes workshops on mechanics, embedded systems, and computer vision, tailored to be easily understood by the participants. The main focus is not only on creating a working prototype but also on challenging the students and fostering practical learning in their first year. With personalized mentorship, the students build a fully functional project prototype from scratch, gaining valuable hands-on experience.

In this year's Genesis event, first-year students teamed up in trios. With five days on the clock. The main project involved building a maze solver using a differential drive robot, guided by computer vision principles. Detailed sessions were conducted, covering major engineering mechanisms, working with electronics (particularly Arduino Nano), and the basics of image processing and computer vision. Participants received thorough instruction on the building and functioning of a differential drive robot, Arduino interfacing code, and computer vision Python code for the maze-solving bot.





Each team received a kit and personal guidance for assembling their bot. With expert guidance, the teams seamlessly integrated diverse components, building fully operational maze-solving robot.

Date: November 4th, 2023

Place: Orion, NIT Tiruchirappalli

Footfall: 90



RMI X PSR (Pragyan Social Responsibility) Workshop

In collaboration with Pragyan, the esteemed annual technical fest of NIT Trichy, this workshop extended its reach to high school students from diverse government schools across Trichy.

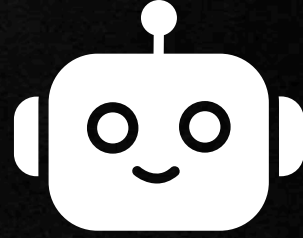
Tailored specifically for these young minds, the workshop offered an immersive dive into the fundamentals of robotics, covering electronics, mechanics, microcontrollers, sensors, and more. The specially curated sessions ignited a newfound passion for robotics among the students, sparking enthusiasm and garnering overwhelmingly positive feedback.

Date: November 4th, 2023

Place: Orion, NIT Tiruchirappalli

Footfall: 90





Achievements/Collaborations

Robofest 3.0, Gujarat

Robofest is a competition organized by the Gujarat Council on Science and Technology (GUJCOST), working under the aegis of the Dept. of Science and Technology, Govt. of Gujarat, which involves working on new and innovative ideas, preparing a solid proof of concept and finally to develop the proto-type robot in 7 different robot making categories.

The following are the winners of Robofest 2023:
Hexapod (Consolation Prize)

SIH (Smart India Hackathon)

The Smart India Hackathon is an innovative initiative launched by the Government of India as part of its flagship digital India campaign. It is a nationwide competition that brings together students, professionals, and experts from various fields to collaborate and find solutions to real-world problems faced by the country.

The following are the winners of SIH in the Student Innovation Category:

Hexapod (1st Prize)

SANGAM (Pragyan)

Pragyan '24 has been an enthralling experience for RMI, owing to the successful participation of RMI in SANGAM, the subsequent qualification of MedVisor, and their wonderful display at the final Sangam exhibition. The exhibition was attended by various esteemed industrialists, and the dean and was judged and consequently lauded by visitors and experts alike.

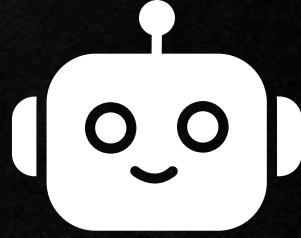
The following projects have won prizes in Sangam 2024:
MedVisor (1st Prize)

IRoC-U 2024 (ISRO Robotics Challenge - URSC)

IRoC-U 2024 consists of an engineering project where the Institutional teams build robots to compete in an extra-terrestrial-inspired arena, performing tasks based on the real-life challenges faced by space robotics. IRoC-U is being planned as a platform for the co-development of technologies in the area of space robotics through organizing challenges.

Team RMI has qualified prelims round and is among the top 150 teams across the country (ongoing competition).







SIGMA

The Business Club

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Foreword from the Core



Sigma, the Official Business Club under the Technical Council of NITT, fosters a platform for business enthusiasts to engage in discussions, debates, and project development, enhancing their business acumen. With a robust social media presence, Sigma showcases its extensive project reports and codes. The club organizes various events for the college community and publishes ENIGMA, its official business magazine. The club has thrived as a platform for our members to develop their skills, engage in real-world business challenges, and foster innovation. Our dual focus on Data Analytics and Case Studies has enabled our members to gain valuable insights and practical experience, preparing them for success in the competitive world of business.

Looking ahead, we are confident that Sigma Business Club will continue to thrive, expanding our horizons and shaping the future generation of business leaders and innovators.

We the Core of the club would like to express our gratitude to our dedicated members, executive team, and faculty advisor for their commitment and hard work. We are delighted to present the official term report of Sigma Business Club for this academic year.

Data Analytics Vertical Projects

Start Forecasting microbusiness density and analyzing their trends for US counties

The objective of the project was to forecast microbusiness densities for all US counties for the last two months of 2022, and analyze trends and patterns for the same for each county. The dataset was primarily collected from GoDaddy's website, with additional relevant data extracted/scrapped from US census data. Data collected from the US Census included census features, tax rates, population demographics, education levels, US treasury rates, rents for 1 to 4 rooms, broadband connectivity and coastal presence. The data was analyzed on both state and county level, with special focus on states showing unusual trends. Finally a model was developed that can predict the microbusiness density of upcoming months, given all the features needed are available.

Tech stacks used: Python, Numpy, Pandas, Matplotlib





Flight Price Prediction and its EDA

The project involved collecting a dataset of 52,179 entries with 15 variables by data scrapping from Yatra.com using Selenium-Python. The EDA focused on various features such as airline, travel dates and times, source and destination cities, number of stops, meal options, baggage policies, and particularly the emissions data. This analysis aimed to uncover patterns and insights beneficial for passengers and to provide an understanding from the airline's viewpoint, utilizing a range of visualization and statistical methods. Additionally, a predictive model using the Random Forest algorithm was developed to estimate flight prices.

Nifty 50 Analysis

Our project embarked with a meticulous exploration of Nifty 50 data sourced from yfinance, dedicating significant attention to detailed exploratory data analysis for uncovering nuanced trends and insights. This initial phase was structured into four distinct segments, ranging from individual stock evaluations to broader sector-wise analyses. Transitioning into a more sophisticated terrain, we delved into the realm of technical indicators favored by quant analysts, strategically deciphering optimal entry and exit points within the market. In the final phase, our approach to time series forecasting transcended conventionality, as we employed a sophisticated blend of stacked LSTM and GRU models embedded within a linear regression framework. This advanced ensemble not only reduced the root mean square error (RMSE) from 210 to an impressive 127 but also demonstrated its prowess in delivering robust and accurate predictions, thereby elevating the project's outcomes to a professional standard.

Layoff Project

The project is about in-depth Exploratory Data Analysis (EDA) on layoffs, utilizing Pandas for data manipulation and Seaborn, Matplotlib, and Plotly for visualization. employed statistical methods including linear regression and advanced techniques such as K-Mean clustering, to uncover insights. This provides valuable insights into layoff trends globally, aimed at informing stakeholders, including business leaders and policymakers. It Segmented the data by industry sectors to identify which sectors are most affected by layoffs. This can provide targeted insights for stakeholders to formulate sector-specific strategies.

Content Recommendation System

Objective: Implement a content-based recommendation system for Netflix movies using NLP techniques.

Overview: Cleaned and processed text data, generated 'Tags' for movies, and vectorized using Countvectorizer. Calculated cosine similarity to suggest personalized movie recommendations based on user preferences.

Results: Successfully deployed a recommendation system enhancing user engagement and satisfaction on the Netflix platform.





Inventory Management (Ongoing)

The domain of supply chain where we are keen on bringing out the demand forecasting for the inventory data set of Walmart retail. The real-world applications of management of inventory levels following consumer behavior in the market for maximizing the profits generated. Using extensive Python libraries like matplotlib, pandas, numpy, seaborn, etc., for comprehensive exploratory data analysis for gaining valuable insights. The selection of models like random forests and times series incorporating neural networks comparing best fit and integrating interactive dashboards at the end, and deploying a web app for the all-new user experience.

Market Basket Analysis

We worked on the dataset of Instacart, an online grocery ordering and delivery platform consisting of purchase history of over 10 million customers. The aim of our project was to analyze customer purchase trends and find products that they are likely to buy together and reorder which are used in suggesting recommendations to customers in ecommerce sites like Amazon, Myntra, etc. Data cleaning was performed initially and customers who ordered more than 4 products were filtered out to get more detailed insights. This was followed by EDA in which we came up with interesting conclusions like the Top 10 products bought department wise and aisle wise from the store, day of the week and time when more orders are placed, etc. Apriori algorithm was implemented on the dataset to get frequent itemsets that are ordered together. ECLAT and FP growth algorithms were also implemented on the dataset.

Analyzing Twitter Sentiment and Cryptocurrency Price Dynamics (ongoing)

To investigate the relationship between Bitcoin price derivatives and sentiment analysis derived from Twitter, our study leverages the Bitcoin-tweets dataset. We are employing Natural Language Processing (NLP) techniques to analyze the sentiment of tweets related to Bitcoin. By incorporating lagging and leading time durations, we aim to ascertain the extent of dependency between Bitcoin price derivatives and sentiment fluctuations. Additionally, time series analysis methods are utilized to examine the temporal patterns and correlations between sentiment dynamics and Bitcoin price movements. This approach enables us to gain insights into the impact of sentiment on Bitcoin price derivatives, contributing to a deeper understanding of the cryptocurrency market dynamics.





Case Studies Vertical Projects

Market 360: Real Estate

The main objective of this project was to conduct comprehensive market research within the real estate industry by synthesizing insights from a diverse range of articles, podcasts, and magazines. The goal was to gain a nuanced understanding of the various sources of income within the sector. Our research identified six pivotal sources: real estate development, real estate rentals (commercial included), REITs, Real estate consulting, Flipping properties and Crowdfunding. We executed an in-depth study on each of these sources, finally compiling it in the form of a report and Power BI dashboard and concluding with a podcast focused on the same.

Tech stack: Power BI, Excel, Data from Kaggle

The EV Project

Our project dealt with overall analysis of EV industry in India and abroad to project the timeline when it will become successful. Key problem statements include evaluating the feasibility of battery swapping vs battery charging , traditional charging infrastructure, addressing the complexities of battery recycling to minimize environmental impact, and strategizing to overcome range anxiety among potential EV adopters. Additionally, understanding the intricacies of battery components and advancements therein is crucial for fostering innovation in EV technology. Analysis of overall industry considering government subsidies and incentives. Moreover, forecasting the transformation of the automobile industry towards EVs or hybrids hinges on meticulous policy analysis and cost considerations. To facilitate informed decision-making, we are planning to prepare a dynamic dashboard comparing ICE vehicles and EVs over time, integrating data from CarDekho with Power BI. This comprehensive approach utilizes various market entry frameworks, including SWOT analysis, Porter's Five Forces, value chain analysis, Ansoff Matrix, and McKinsey's approach, to delve into policy implications, competitive dynamics, growth prospects, and strategic imperatives in the evolving EV ecosystem. By addressing these core phenomena we can project the timeline of ev success rate and plan to structure sustainable transport system.



2008 Financial Crisis series

The aim of the series is to analyse the meltdown of Real estate housing bubble in 2008 and analysing its impacts and implications across the US and into the present day. The project is a three part series explaining the background economics to understand why the crisis impacted the system that deeply to understanding what were the affecting factors that worsened the crisis and finally qualitatively analysing the steps taken by responsible authorities and state actors to mitigate the crisis, although only after it reached its full blown level. The project also attempted to understand through secondary research, to understand the impact of the housing bubble on general public and what methods were put in place to protect them from such a crisis in the future. The project also aimed to critically analyze the policies that took effect as a result of the crisis. Further, the main aim was to explain the related economic terms such as Securities, Mortgage-related debt and Credit Ratings in simple words to appeal to a general audience.

Tools used: Research Papers and official documentations from the US dept of Treasury for facts and figures, Articles and Statistics.





Economics of Inheritance

The aim of the project is to analyse the impact of inheritance on global economy and to analyse its contribution towards wealth inequality. The main points discussed were:

1. To discuss different types of inheritances, inheritance rights and their taxation rules.
2. To discuss Invivo inheritances and human inheritances.
3. To analyse potential of inheritances towards mitigating inequality instead of contributing to it.
4. To analyse population registers and country-wise inheritance data to map out the largest countries with inheritance percentages and find whether there exists a positive correlation between inheritance and global wealth inequality.
5. To qualitatively understand how this is significantly contributing to global inequality.

Technical Tools Used- Population registers for datasets, Excel

Qualitative Tools- Research Papers, articles, second-party data analysis to qualitatively analyse the problem.

Luxury Brand Analysis (Ongoing)

This project involves a deep dive into the seven distinct segments of the Indian clothing market. We'll analyze the business models and pricing strategies employed by each segment, alongside customer retention techniques. By leveraging these insights, we will simulate the launch of a luxury clothing store in a major Indian city, such as Bangalore. This simulation will allow us to determine the most profitable customer segment and develop targeted brand-building techniques specific to the chosen demographic.

Enigma Magazine Publication

Sigma published its 2nd Edition of the Enigma Business Magazine.





Events conducted



Orientation - Riskscape

Sigma, in collaboration with the Orientation Team, conducted an event for the freshers called RiskScape.



Inhotts - Mergerscape

Sigma, in collaboration with Pragyan, conducted an event for the freshers called MergerScape.



Commercialization of space

Analyzing new frontiers in the aerospace industry through new private-owned players by the aerospace market, their motivations and their key USPs to identify new trends in the industry. Studying the Financials of these companies and potential of growth in this field. Identifying the problems that can be solved by expansion in the Space industry, in future. Key focus is on the following:

1. Identifying customers
 2. Comparing a few key players in terms of their technology 3. Their revolutionary impact
 4. The opportunities it holds for the market, and for humanity. 5. Looking at the ethical angle of risks of commercializing space, and what steps different governments have taken to mitigate the risks that come along with it.
 6. Understanding how the tax system would be framed in this segment.
 7. Taking a look at the regulatory bodies currently for space, and how it may involve these private companies in the near future.
- Dived deeper into 2 main streams that are expected to be generated by this field: Space mining, Space tourism. Also, studied the huge chunk of national investments made in this field in various countries, mainly the USA.



Techids - Monopoly Mania

Sigma, in collaboration with Pragyan Social Responsibility Team, conducted a fun gamified business awareness event for the students of various local Government schools.





Guesstimate and Case Study series



A weekly series to help the team and viewers understand the concept of “market sizing” and “case study” has been launched on our socials. It is a common technique used in consulting and product management firms which is also asked in interviews. By teaching these concepts in videos we learn ourselves and all the audience that comes on our channel.

Some guesstimates that have been uploaded are:

1. Estimation of no. Of Fans in India
2. Estimation of no. Of students crossing NIT Trichy gate.
3. Estimating the number of Google searches made in an hour.
4. Estimating the number of washing machines sold in India.

Some case studies that have been uploaded are:

1. Profitability framework
2. Pricing framework

Competitions

Strategists 2.0

A Case Consulting Competition by Hightech Solutions where one of our members secured 8th place among 500+ participants from various reputed B schools and Technical colleges across India.

ABInBev 100+ Challenge

Our team of 3rd years participated in the challenge and reached the 3rd and penultimate round among 13000+ students from various IITs and IIMs.

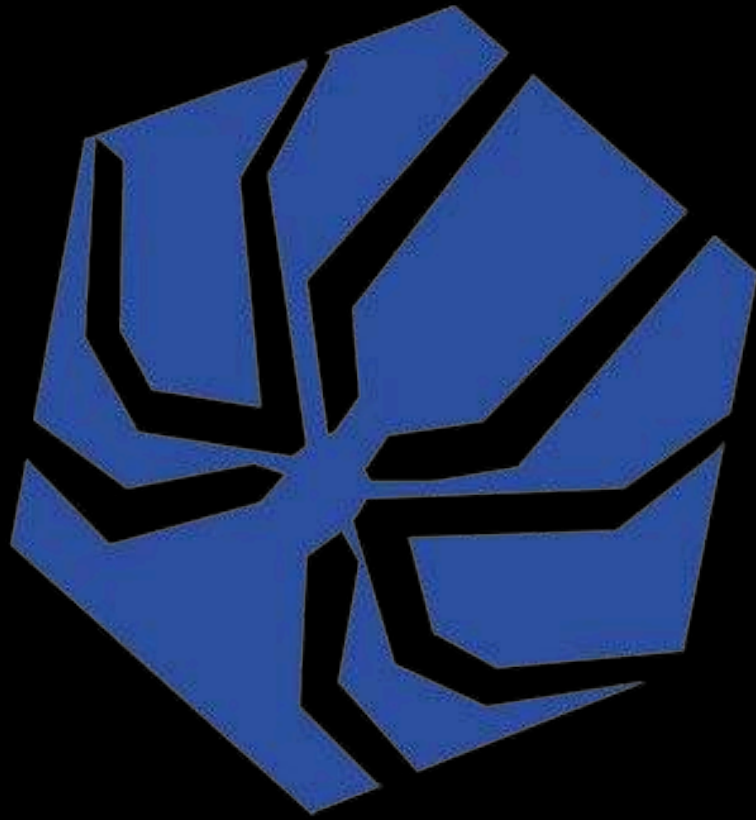
Data Decode Challenge

This is a Data Analysis Challenge by IIT Delhi where teams' data interpretation and analysing power were challenged through a quiz, a case study and its presentation . We secured 3rd place where more than 210+ teams participated from different institutes in India.

Company collaborations

This initiative involves the business club to undertake real-world projects, offering services such as data analysis and case studies. By working with data sourced from various companies such as startups, members gain practical experience in addressing genuine challenges and renining their analytical skills, ultimately fostering continuous skill improvement.

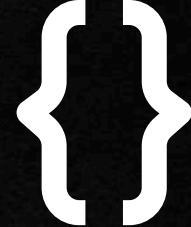
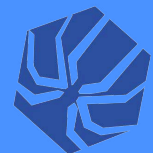




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About

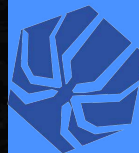
Spider R&D is the official Research and Development Club of NIT Trichy. It is a one-of-a-kind club with an intersection of diverse domains in the fields of Computer Science, Electronics, and Robotics. We abide by the motto - “Ideate, Innovate”. We specialize in building scalable, large-scale applications, identifying research gaps, and bridging them via publications, participating in competitive programming contests, and challenging hackathons.

Apart from these, we also undertake initiatives and conduct events to give back to the student community at NIT Trichy by organizing workshops, contests, and publishing technical blogs.

Projects

LYNX

A mobile app for NITT students to access vital community, academic, and other campus information. It also gives students an up-to-date calendar of events, notices, holidays, and the academic calendar. It has an uptime of around 2 years with 6000+ users. A secure QR code is included in the app that can be used as a digital identity card by the student's NITT. Lynx is also used as an identity provider called Lynx Central Authenticator, and it includes an authentication system that can be integrated into other applications.

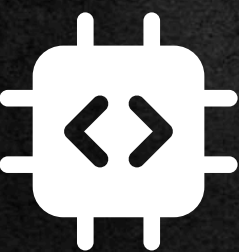
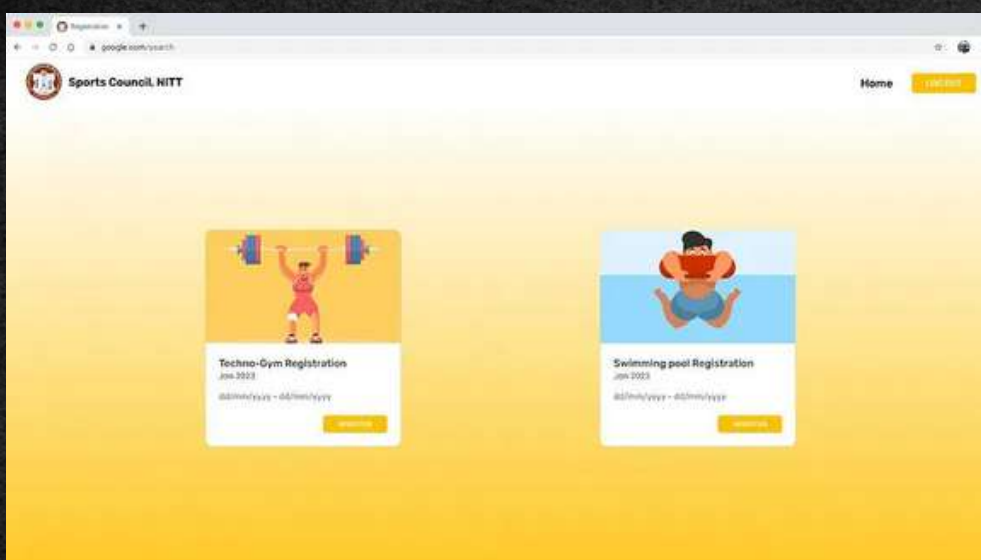


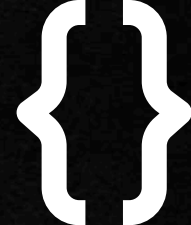
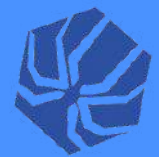
Further features in progress include Lynx GPT: An AI-based chatbot assistant that uses the power of Large Language Models(LLMs) to provide reliable responses regarding various queries pertaining to official announcements, academic course plans, events, fests, etc.



TECHNOGYM AND SWIMMING POOL REGISTRATION

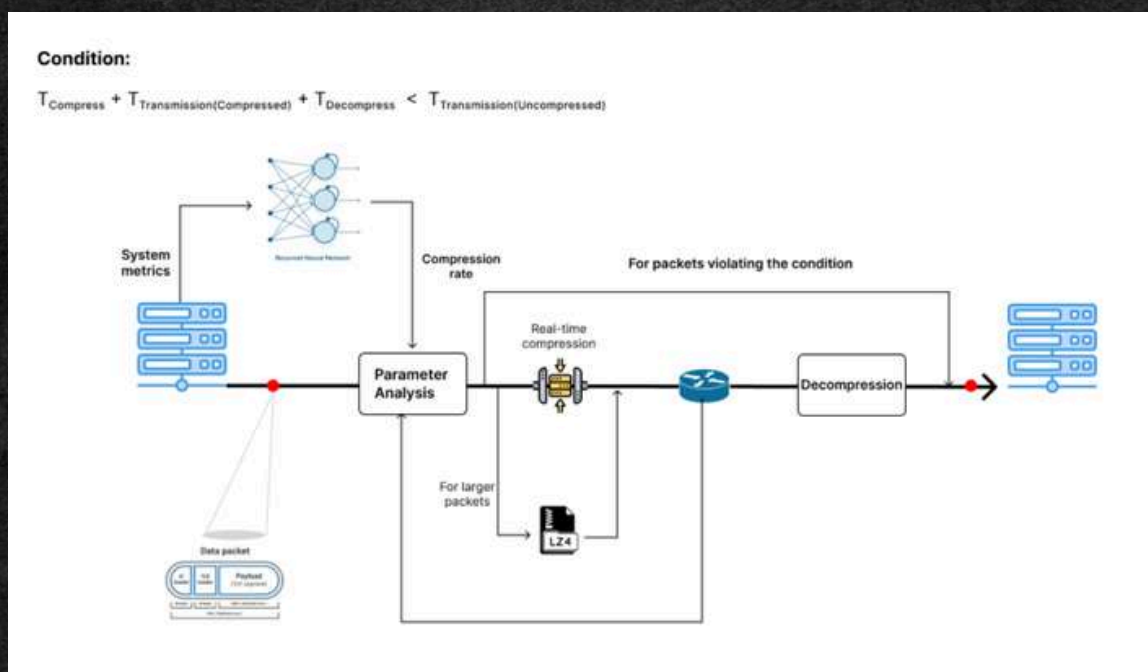
Spider R&D in collaboration with Sports Council NITT developed and hosted the portal for registration of Techno Gym and Swimming Pool slots for undergraduate and postgraduate students for the July session 2023 and the January session 2024. The website was designed to handle multiple concurrent requests to facilitate a smooth registration process during times of high network traffic. The portal made use of Lynx-Auth for authentication of users.

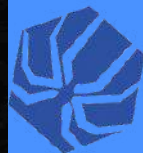




CASCA

Coflow Aware Selective Compression Accelerator (CASCA) is a novel research undertaking in the field of computer networks. It aims to enhance network performance by integrating selective compression mechanisms into the backbone network infrastructure. At the heart of CASCA lies compression rate prediction and transit time estimation. The project utilizes deep learning based neural network architectures to predict these parameters thus enabling the system to dynamically adapt its compression strategy based on vital system parameters such as CPU utilization, memory availability and network bandwidth. The Project went on to be the winner of the Smart India Hackathon 2023 for the Problem Statement PS1412 - Data Compression over a backbone Network



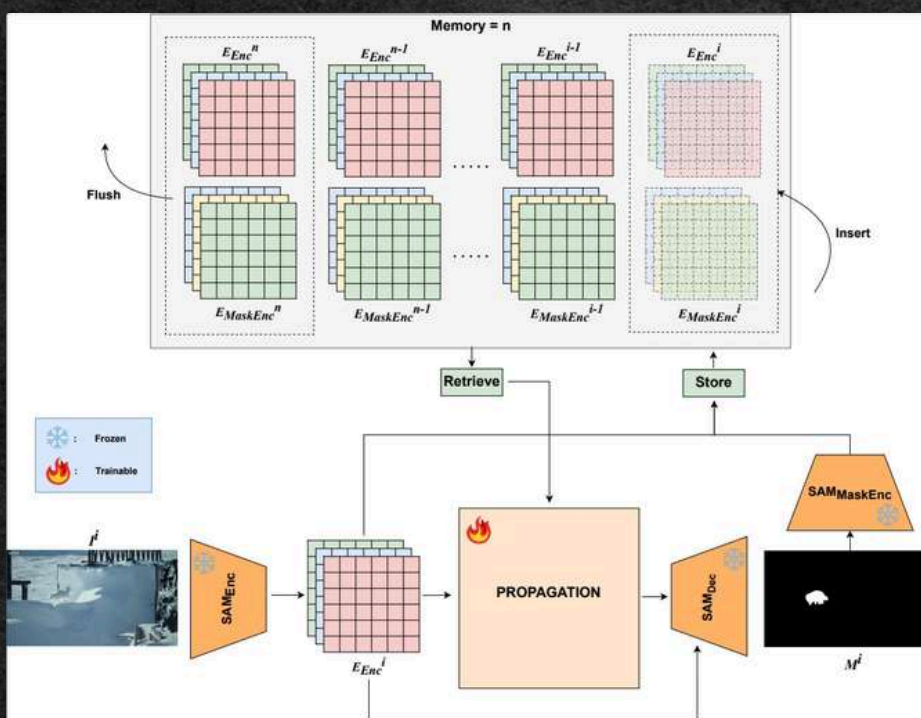


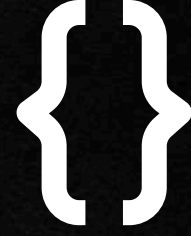
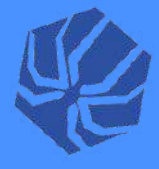
SAM-PM FOR CAMOUFLAGED OBJECT SEGMENTATION

The aim of the project is to adapt existing segmentation models (like SAM - Segment Anything Model) for Camouflaged VOS (Video Object Segmentation). Existing methods on SAM have demonstrated results with camouflaged image alone, and we plan to extend the architecture for videos while ensuring temporal consistency across consecutive frames. Camouflage detection

is mainly used for surveying, wildlife protection, and military purposes. SAM-PM's novel propagation module enforces temporal consistency via spatio-temporal mechanisms, enhancing VCOD performance over state-of-the-art techniques with minimal parameter addition.

The work was accepted into the world's highest ranked Computer Science Conference - the IEEE conference on Computer Vision and Pattern Recognition (CVPR) 2024 workshops.





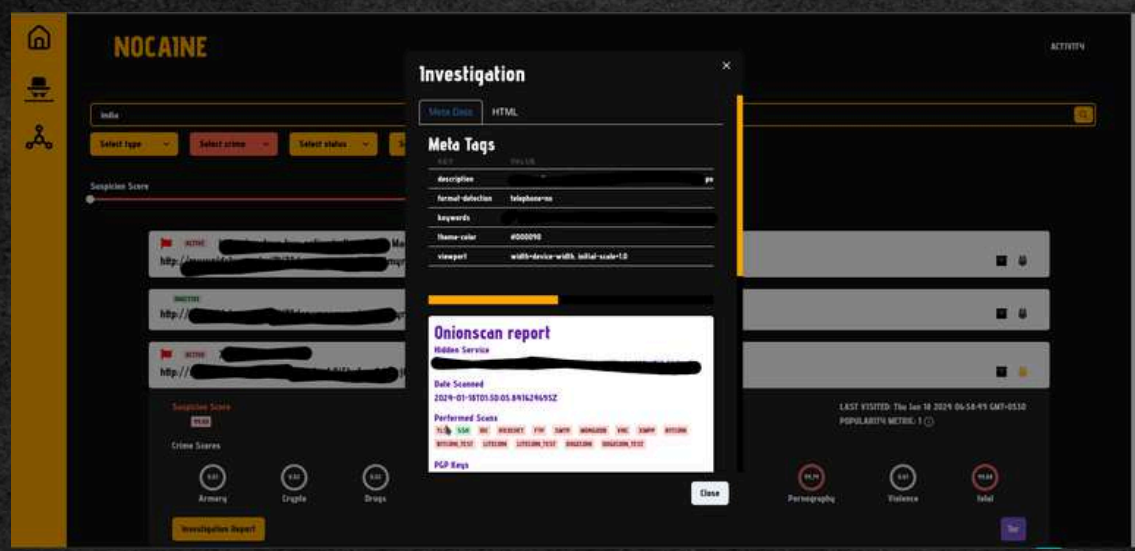
NoCaine

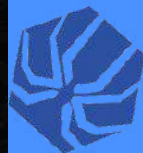
NoCaine is an intelligent system for monitoring illegal activities on the dark web, employing Microservices architecture for distributed deployment. It's designed to be fault-tolerant and horizontally scalable, utilizing Docker for containerization. The system classifies dark web services using Rosetta for text and CLIP for image analysis. Elasticsearch aids in deep searches, and future plans involve integrating a chatbot for query assistance.

Onionscan

identifies information in dark web services, and site-related data is stored in MongoDB and Redis. Dynamic web apps are crawled using Helium, and a GUI with a dashboard and graph 5 visualizations enhances investigative capabilities. Access is restricted to authorized individuals via Openvpn.

The project won the Runner-up position in the inaugural edition of the RACCAM 1.0 hackathon organized by Rajasthan Police in January 2024. The project also went to finals of various other national cybersecurity hackathons - Kavach 2023 by MHRD , Chandigarh CyberTHON 2023





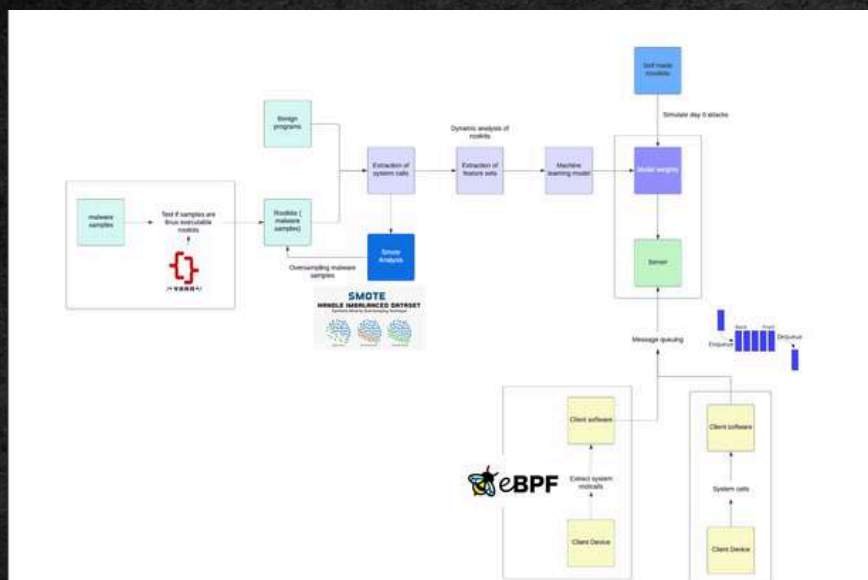
Sportsfete 2023 Website and Marathon Registration

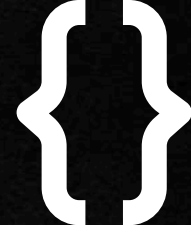
Spider R&D in collaboration with SportsCouncil NITT , developed the portal for marathon registration during the course of Sportsfete 2023. The portal made use of Lynx-Auth for student authentication and saw close to 1500+ registrations.



Sebastian

Sebastian dynamically analyzes the system calls done by a program extracted by the eBPF (extended Berkeley Packet Filter) running in the system kernel on a trained machine learning program that would detect rootkits.

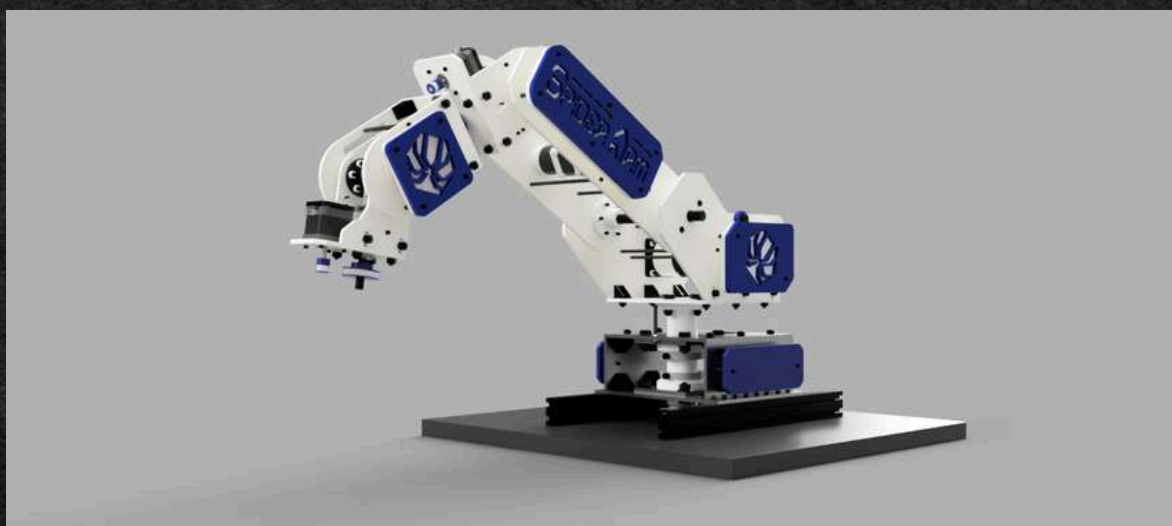




Spider Robotic Arm

The aim of the project was to design and create an affordable 6 DOF robotic arm with a 1-meter reach that can assist in tasks such as pick-and-place operations in small-scale manufacturing. The arm makes use of a double ring load transfer mechanism for effective transmission of load.

The project was undertaken as a long term research project to explore research in the intersection of robotics and machine learning. Future plans include vision based robotic arm control, tele-operations and integration with LLMs for task planning.





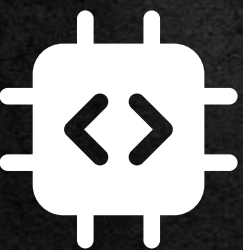
Bin Busters

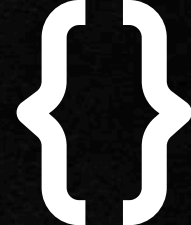
Waste segregation is a tedious and often challenging task at both the consumer and industrial level. Current waste management systems on an industrial scale use manual hand-picking along with coupling a network of conveyor belts together. To overcome these challenges, we propose a new method, using a single conveyor belt, such that the waste is sorted in a single run of the conveyor belt. This method uses a lateral gate assembly to control the flow of waste, which is in turn detected by using an object detection model, yolov5.

The project won the 2nd runner up at Sangam Hardware Hackathon conducted during Pragyan 2024 under the “Energy and Environment” track.

UHUGV

UHUGV (Unmanned Hybrid Underwater Ground Vehicle) is an amphibious bot that is capable of traversing both land and underwater. The ground locomotion is achieved by track drive, and the underwater motion is achieved by bio-mimicking fin ray fish locomotion. The robot has a track drive mechanism for the purpose of traveling in marshy terrains. We can control the movement of the bot underwater by adjusting the amplitude and angular frequency (mathematical model of fin ray motion) of the servos attached to a fin-like material.



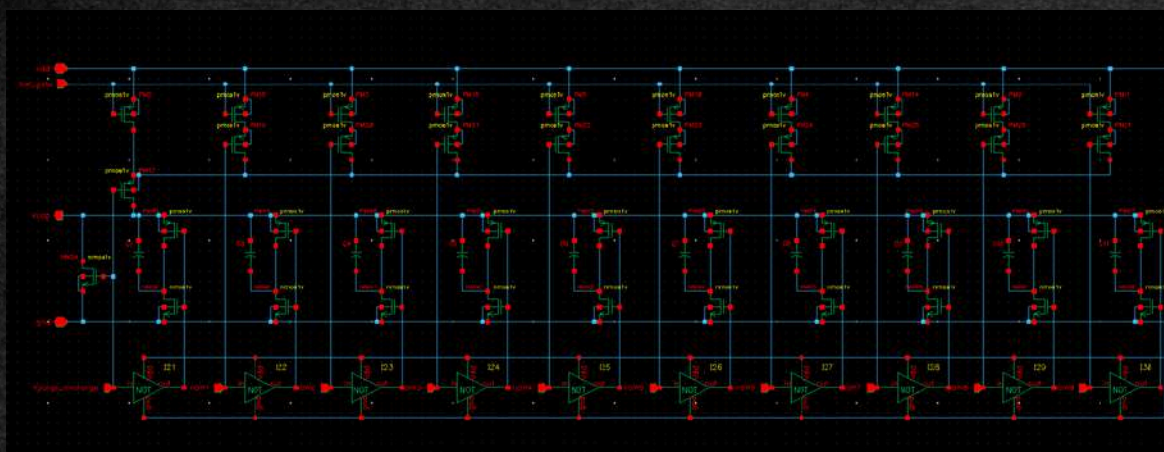


90 nm 8T Subthreshold SRAM Design

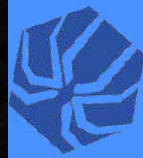
This VLSI research project addresses the critical need for energy-efficient SRAMs by focusing on aggressive supply voltage scaling. Targeting energy-constrained applications, the research presents a high-density SRAM implemented in a 90 nm CMOS technology. The overarching goal is to minimize both active and leakage power, with an emphasis on achieving a minimum operating voltage. Project workflow spans design, simulation, layout, and post-layout simulation in 90nm CMOS technology.

nW Solar Energy Harvesting PMIC

Designed for low-power self-sustaining systems, this IC provides a stable voltage source from harvested solar energy. Project workflow spans design, simulation, layout, and post-layout simulation in 90nm CMOS technology.



Achievements



CVPR 2024

The Project SAM-PM for Camouflaged Video Object Segmentation (CVOS) was accepted into the world's highest ranked Computer Science Conference - the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2024. The conference will be held at Seattle , USA from 17th to 21st June 2024

ICPC 2024

Team 2Golu1Tonu secured Global Rank of 101 in the ICPC World Finals 2024 held in Egypt on 18th April 2024.

Team we_have_ak secured a rank of 28 in ICPC Asia West Regionals 2024 held in the month of April 2024. The team earlier secured a rank of 23 in the Qualifying Amritapuri Regionals onsite round.

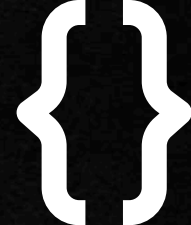
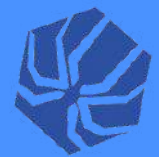
Team SAP_01 secured a rank of 31 in the ICPC Chennai Regionals 2024.

Secured AIR 61 in the ICPC AlgoQueen Finals 2024.

SMART INDIA HACKATHON 2023

Team $O(n!)$ was declared Winner of the grand finale of the SIH 2023 held at Chittoor Andhra Pradesh during 19-20 December 2024. The team worked on the problem statement PS1412 - Data Compression over a backbone network.





EYANTRA ROBOTICS COMPETITION 2024

A team from Spider R&D secured 4th place in the national-level eYantra Robotics Competition (eYRC) 2024 conducted by IIT Bombay. The finals took place in the month of March 2024.

SANGAM 2024

Team Bin-Busters secured 2nd runners-up in the Sangam Hardware Hackathon conducted during Pragyan 2024 under the Energy and Environment Track

Team UHUGV qualified for the final round under the Defence Track

RACCAM 1.0 2024

Team Nocaine was the runner up in the Rajasthan Police Hackathon's inaugural edition conducted by RACCAM (Rajasthan Police Cyber Crime Awareness Mission) for their efficient DarkWeb monitoring solution. The hackathon finale was conducted on the 17th and 18th of January 2024 at Jaipur, Rajasthan. The problem statement saw a registration of around 87 other teams.



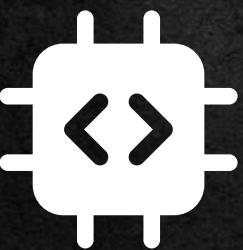
Events and Initiatives

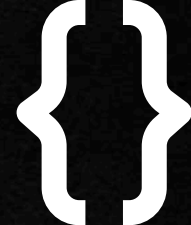
TriNIT Hackathon 3.0

The 3rd edition of the PAN-India TriNIT Hackathon was conducted in collaboration with Spider R&D NITT , ACM-NITK and CSEA-NITW during 8th to 10th of March 2024. The 36-hour hackathon saw 4,200+ individual and 1800+ team registrations. Contestants competed for 36 hours over a diverse set of problem statements across the domains of software development , machine learning , web 3.0 and electronics. The hackathon had VISA as its Title sponsor and was powered by Unstop. We additionally had EaseMyTrip as the Travel sponsor and Zephyr Technologies as supporting sponsor.

Spider Week

Spider Week 2024 was a week-long bootcamp for NITT students conducted by Spider R&D on various technologies - Robotics, Machine Learning, Blockchain, Competitive Programming, Networking and Security. This was an initiative undertaken to share knowledge and give back to the student community. The week also comprised of a Competitive Programming and a Version Control Systems contest using Spider's Open-source tool Statik





Spider R&D x WIN NIT Algos Workshop

Spider R&D's Algos division collaborated with Women Inclusivity Network (WIN) NITT on the occasion of International Women's Day (March 8th 2024) to conduct an "Introduction to Competitive Programming Workshop"

Techids 2.0 Workshop

Spider R&D in collaboration with Pragyan's Social Responsibility Wing (PSR) conducted the second edition of Techids - a workshop series aimed at teaching the basics of Machine Learning to 11th and 12th grade school students from various government schools in and around Trichy

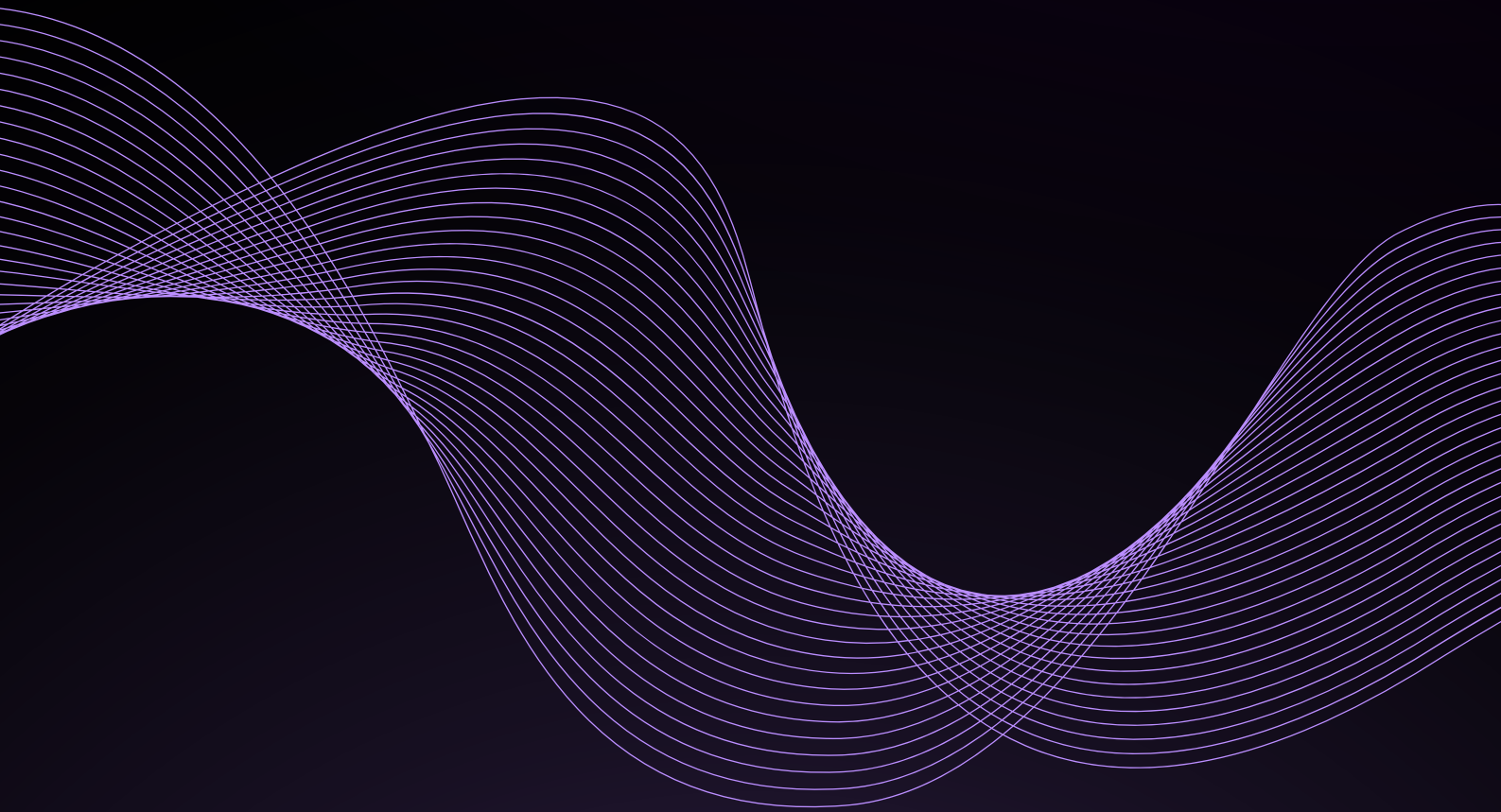
Spider Free and Open Source Software (FOSS)

Spider FOSS is an open-source initiative by Spider R&D to encourage open-source culture among the student community at NIT Trichy. As a part of Spider FOSS , Spider R&D open-sourced Statik - a decentralized version control system

PRAGYAN ANNUAL REPORT

2024

A detailed summary



PRAGYAN '24

CHRONOCLE: THE SAGA OF TIME

Pragyan, the esteemed international techno-managerial organization of NIT Trichy, established in 2005, has persisted as a beacon for students to demonstrate their technical acumen and managerial proficiency. Garnering acclaim as one of India's most sought-after fests, Pragyan annually attracts participants from across the nation and globe, transcending geographical boundaries to become one of the largest international techno-managerial extravaganzas in the country. This year, Pragyan took place from 22nd February to 25th February 2024.

Notably, Pragyan distinguished itself by becoming the first-ever student-run organization to achieve the esteemed ISO 20121:2012 Certification for Sustainable Event Management, a distinction shared only with iconic entities such as the London Olympics and Manchester United Football Club. Additionally, Pragyan's commitment to quality was underscored by its acquisition of the ISO 9001:2015 Certification for Quality Management Systems, further solidifying its reputation as a paragon of excellence.

With the theme "Chronocle: The Saga of Time", Pragyan '24 transported attendees to a world that went beyond the present, narrating dreams of the past and ambitious visions of the future. The festival offered a diverse array of competitions, exhibitions, and workshops designed to showcase the latest trends in technology.

In preparation for Pragyan'24, a series of social initiatives were undertaken, highlighting the commitment of the event organizers to community engagement. Pragyan's Social Responsibility wing initiated the "Bag of Delight" project, focusing on enhancing the educational environment for children in government schools. Concurrently, IGNITTE and the technical clubs of NIT Trichy spearheaded the "Techids 2.0" educational outreach program, immersing over 300 school students in the realms of technology and innovation. Pragyan '24, also hosted the Cyclothon, a cycle rally aimed at raising awareness for cancer. It was a phenomenal success, with over 500 participants turning up for the programme. Furthermore, to increase green cover, the Social Responsibility wing of Pragyan launched an initiative named "Seedsplash" and scattered seeds in barren land in the Trichy Tanjore highway.



For the edition of Pragyan, it was an honor to have Mr. Laxmesh BH, Vice President and Head of Missiles & Aerospace Business, L&T Defence, Larsen & Toubro, as the Inaugural chief guest. Dr N. Kalai Selvi, Director General, CSIR & Secretary DSIR graced the valediction ceremony with her presence.

Pragyan NIT Trichy hosted Dr. P Veeramuthuvel, the mastermind behind India's lunar mission, as part of the Amrit Kaal Initiative. The NITT alumnus, Dr. P Veeramuthuvel delivered an enlightening talk, unravelling the technicalities of ISRO's incredible lunar mission.



This edition of Pragyan also showcased a distinguished lineup of guest lectures by experts renowned in their respective fields. The crossfire and guest lecture wing of Pragyan brought esteemed individuals from diverse realms of science and technology. Guest Lectures included worldrenowned Nobel laureate Dr. Richard Robert, Shreya Dasgupta, Arsh Ali, Sesa Kanthamraju, Anuj Dhar, Chandrachur Ghose and Savio Mascarenhas. Pragyan Crossfire was a grand success with 8 panelist and a moderator discussing on the topic, “Non-Violence vs Revolution: Is War Required for Social Change”.

A highlight of the Pragyan'24 experience was the workshops, led by industry professionals offering thoughtprovoking, practical sessions in various technology specializations. Pragyan '24 featured a diverse portfolio of workshops by leading companies in the tech industry such as Texas Instruments, Intuit, HT India Labs, Latent View, Analog Devices, Upstox, KPMG, Cybage, Autodesk, MongoDB, Grant Thornton, and Cisco.



Pragyan'24 hosted 34 events spread across 7 clusters (Bytehoc, Manigma, Innovix, Robospire, Pixalette, Pandora's Box and Phronesis) witnessed participation from more than three thousand students. Along with this, Pragyan also conducted Hackathon in three different domains in the Virtusa campus, Chennai, which includes Blockchain, Smart City and Environmental Sustainability.

Attendees also witnessed cutting-edge robotics technology including the Bionic Quadrupled Robot, the Multi Humanoid Robot Show, Zafira Robot, and Technologies like the Gesture Controlled Drone, AI enabled Drone, Rhumi hybrid rockets, ISRO Space Bus and satellites by Space Zone Chennai were exhibited, offering a glimpse into the future.



As part of the fest, Pragyan organized Sangam and Ingenium, events aimed at fostering out-of-the-box thinking and providing a stage for aspiring technocrats to showcase their creativity through inventions and ideas under various verticals like Healthcare, Defence and Environment.

The Student Center for Innovation in Engineering and Technology, known as SCIEnt, collaborated with Pragyan this year to host a two-day event titled OpenHouse. The event aimed to showcase a multitude of projects made by the student community, spanning technical clubs, departments, and even featuring select startups founded by students.

Each year, Pragyan's infotainment shows exceed audience expectations. This year's lineup promised to enrich the fest with acts such as Kaashi Fire Crew's Fire Act, Skippers Crew act and the Light Crew's LED Flow Act. Pragyan'24 also featured incredible shows by Aerial Acts India, and performances from Naresh Iyer and Non Violinist Project on the final day.



Pragyan witnessed the support of Larsen & Tourbo as Title Sponsor, Cisco as Powered By Partner, Recal as Legacy Partner, TVS as Driven By Partner, BharatVersity as Youth Partner Technosport as Associate Partner and was also supported by Digital India, Make in India, National E-governance Division, Ministry of Electronics and Information Technology, UNESCO, Youth India Foundation, UDGI Foundation, CEE, and SAYEN.

CONCLUDING PRAGYAN '24

Pragyan provided a platform for many bright students to show their skills, encouraging innovation and ideasharing among students and industry leaders alike. Its legacy lies in fostering creativity, collaboration, and innovative solutions for real-world problems, leaving a lasting impact on both academic and professional realms.