TERM
REPORT
2021-22

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Technical Council's Report

DIGITIZATION

The Technical Council created the **NITT Wiki**, an open for all resource aggregation wiki for all student-related information

To streamline communication and update students on notices and deadlines, the **Lynx app**, ideated in 2014, was finally launched by Spider R&D Club with students and student bodies onboarding.

The centralised student portal, **Dashboard.nitt.edu**, was launched by **Delta Force** to provide an all in one access spot for all student-related portals.

The inventory management system, **iNITT**, is being beta tested by **Spider R&D Club**, to help keep track of purchased and shared inventory items.

The **Hostel ID generator** was created by the Technical Council to help with automating the creation of thousands of digital ID cards, which can later be printed as per request.

All clubs of NIT-T have been provided with **independent websites** to feature their projects/initiatives to a large digital audience.
The **scholarship portal**, by the **Delta Force** club, was expanded for all **RECAL** and institutional scholarships, with more than 1000+ applicants.

The **Alumni Portal** in association with **Vaave** was established and students were onboarded to allow for greater reach and communication amongst alumni of REC and NIT-T

For easy approvals of Bills for expenditure and reimbursements, **Delta** developed the bills portal

EXPLORING TECHNOLOGY:

- The Technical Council utilised the benefits of Augmented Reality by creating AR Instagram Filters of the campus for people to visit or revisit and cherish.
- For the NIT Conclave and Pragyan, the Technical Council explored the realms of the Metaverse and were the first to do it in India, to have an experience for those wanting to explore NIT-T in these Covid times. More than 10,000 people tuned in to enjoy the games, sessions and many more experiences.
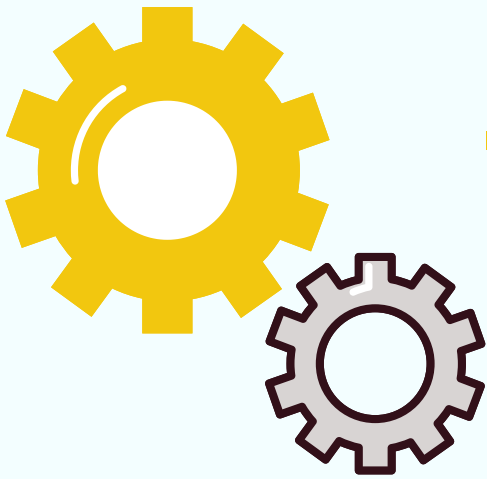
HARDWARE:

- The SAC building was fitted with 72 additional LAN connections to provide high-speed internet access for student clubs to work on projects and utilise cloud resources at a rapid pace.
- The purchase of a new student server for the Spider R&D club has been initiated
- The Students Clubs explored the tools present in the CoEs, with the fabrication of components being moved in-house.
- The purchase of a portable telescope has been initiated for the benefit of all those interested in the field of Astronomy.

OPEN SOURCE DEVELOPMENT:

To promote the Open Source culture in NITT and compete with the top GSoC contributors like NITK, the Technical Council started the TecOS, an open community

- Two "How to begin with" sessions were made to help students interact and understand how to start with their open-source contributions
- Git Cheatsheets were shared to help with quick references for contributors
- GSoC mentors were onboarded from across India to help students to work on project proposals and contributions

EVENTS

NIT ConclaveX

The **10th edition** of the inter NIT conclave was conducted successfully with more than **12 competitive events** conducted in collaboration with the clubs & communities, namely **Spider, Ecell, Winnitt, Graphique, RSFNITT, Delta, 180DC** and had combined participation of **1300+** students and **4 Speaker sessions on Artificial Intelligence, NFTs, Additive manufacturing** and Entrepreneurship, **4 Workshops on Web3, Robotics, and Stock Markets and investing**, conducted in collab with **RMI** and **Profnitt**

EVENTS

TransfiNITTe'22

- With more than 20 applicants to represent NITT at Smart India Hackathon'22, the intra NITT nomination procedure was conducted to shortlist the top 10 nominated and 5 more waitlisted teams

Human Library (with Pragyan)

- A section of 7 different speakers were brought to share their unique life experiences, be it how it is to be born blind or to be a monk

Gamescape (with Pragyan)

- VR games, Car simulator, and PS4s were set up at Orion for students to come to play during the fest. A laser tag arena was set up in association with Pragyan Infotainment.

ENTREPRENEURSHIP DEVELOPMENT:

- Fostered CEDI relations through the appointment of a dedicated student PoC.
  - CEDI incubation model publicity was also done to promote more NITTians to utilise the support provided within the campus.
  - Provided internship opportunities for NIT-T students at CEDI incubated startups
  - Utilised CEDI workspaces for student activities including Pragyan
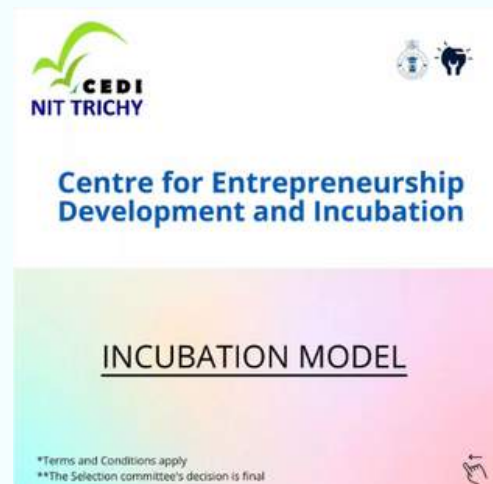
- ISRO-STIC session was held in EEE auditorium for students interested in Aero Space projects

ALUMNI RELATIONS:

- Industry Insider sessions, in association with NITTSAC, were held to display what it takes to go from NIT-T to the various industries including IT, Aerospace and so on.
- Alumni funding and mentorship for Technical Club activities were sourced to allow for greater alumni interaction.
- Healthathon, an initiative to back NIT-T Med Tech projects by RECAL, was initiated.
- SCIEnT student survey was conducted to gather information on requirements on hardware needed, which is to be requested for funding through Alumni (NIT-T Batch of 1990)

RESEARCH:

- Researchology sessions were conducted by the PhD scholars of the campus to guide research interested B.Tech students on how to proceed with their careers.
- IEEE Student Branch sensitisation sessions were held to onboard UG students to the student team of this chapter.
- A total of 10 papers were published and many more are in the process of publishing, all by student club members.
- All projects presented at Pragyan's Sangam are in the process of being patented.

UPSKILLING

- **30 days of Cloud**
  - A month-long event on Cloud Computing was conducted by members of Google Developer Student Clubs to help students kickstart their work in Cloud.

- **Code Currents 22**
  - A competitive coding contest was organised in association with EEE-A.

- **Android Study Jams**
  - A month-long Flutter event, was organised by members of Google Developer Student Clubs to help students get started with App development and Flutter.

- **BLOCKCHAIN 101 on Tezos By Mudit Marda**
  - Organised by Technical Council's CryptoNITT.

- **Web3 workshop**
  - Organised by Technical Council's CryptoNITT during Pragyan.

Communities' Report

Google Developer Student Clubs

Google Developer Student Club is a university-based community group for students interested in Google developer technologies. Students from all undergraduate or graduate programs interested in growing as a developer are welcome. By joining a GDSC, students develop their knowledge in a peer-to-peer learning environment. THE Google DSC NITT chapter has 1061 members, a Community Lead, a Core team of 4 people, and a Tech Team of 10 people who oversee the community. Due to the pandemic situation, All the initiatives taken up were online and are as follows.

CAMPAIGNS:

30 Days of Google Cloud was an initiative through October to allow students to kickstart their learning on cloud technology using practice on Google Cloud - the tool that powers apps like Google Search, Gmail, and YouTube. Google provided free Cloud credits for participants to access the platform and learn the concepts. In addition, three sessions were conducted in October to cover the concepts. They were facilitated by Aananth V. The 22 people who finished the track got a special mention on our handles and official goodies from Google.

Android Study Jams leverage peer-to-peer teaching to train a new generation of student Android developers. This initiative aims to help student developers build their careers and put them on a solid path toward earning an Associate Android Developers Certification. There were three sessions conducted in the months of February and March. Abdul Ameen facilitated the sessions, and the basics of Kotlin were covered over the series of those sessions. Relevant resources by Google were provided to the participants.

COLLABORATIONS:

Code Currents: 16th February 2022

GSDC NIT- Trichy Collaborated with Currents (The Technical Symposium Team of the Electrical and Electronics department of NIT Trichy) to conduct a competitive coding contest. The contest gathered 131 registration, and the top three winners were announced.

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 year, 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 taken up this year

WIN-NITT Mentorship Connect (July to September 2021): 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 35 alumni mentors participating across the globe to mentor 50 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.

Demystifying Research Internships (4th September 2021): An interactive Q&A session to guide students amidst the multitude of research opportunities. The session was conducted by student speakers Kimaya Suryarao (MME, Batch of '22), Jayamathangi S (EEE, Batch of '22) and Kathika G Kumar (Civil, Batch of '22), with research experiences of Mitacs Globalink, DAAD-WISE, NTU-India Connect, and IAS Summer Research Scholarships.

#IamRemarkable (15th September 2021): A workshop to celebrate the power of diversity, inclusion and equity, while empowering everyone to celebrate their achievements in the workplace and beyond. The session was conducted by alumni facilitators Meera Mahadevan (Civil, Batch of '20) and Shivani Chander (CSE, Batch of '20), featuring an online workshop highlighting the importance of self promotion in careers and tools to practice this skill.

TechPropelHers (July to August 2021): A series of 2-minute animated videos presenting the stories of women pioneers who propelled the STEM fields in exciting trajectories.

WOMXN IN TECH COMMUNITY

Generation Google Scholarship Session (10th November 2021): An interactive session on the Generation Google Scholarship for Women in Computer Science (Asia Pacific). The session was conducted by student speaker Saloni Rakholiya (CSE, Batch of '23), a recipient of the 2021 cohort of the scholarship, providing insights on the application process and her experience of the scholarship.

Google STEP Internship Session (1st December 2021): An interactive session on the Google STEP Internship. The session was conducted by alumni speaker Ishani Srivastava (CSE, Batch of '21), who started her successful career at Google as a Google STEP Intern, providing insights on the application process and her experience of the internship.

International Women's Day Celebrations 2022 (8th March 2022): An online event celebrating the International Women's Day 2022, graced by the presence of the honourable Director of NITT, Dr. Agila G, as the guest of honour. The event consisted of a panel discussion, featuring Deepshikha Kumar (Founder of SpeakIn), Lt Cdr Bidisha Pandey (Ex-Indian Navy) and Lakshmi Mini (Co-founder at GoHuddle), and a virtual treasure hunt.

Events conducted

CodeHERS (22nd September 2021): A woman-only coding contest to encourage all women coding enthusiasts to stretch their potential and unleash their passion for coding.

WIN-NITT Ideathon (4th March 2022): An online ideathon conducted as part of NIT ConclaveX, providing an opportunity for all innovative thinkers to showcase their problem-solving skills by brainstorming creative solutions to help build a more equal future. With 22 teams from across 12 colleges showcasing their ideas to be evaluated by guest judges Prathima Kadari (Lead Collaborator at Omdena), Harsh Songra (CEO & Founder of MyChild App), and Snigdhaa Ritesh (Award-winning Women Rights Activist), the event saw the conception of many innovative ideas that solve issues across various domains.

Collaborations

WIN-NITT collaborated with **E-Cell NITT** to celebrate Women's Entrepreneurship Day by showcasing India's top female entrepreneurs and their businesses to inspire young girls to embark on the challenging journey of entrepreneurship.

WIN-NITT collaborated with **Chippak** for conducting CodeHers to promote an interest in competitive coding among female students. They supported the event by providing stickers for the winners of the contest.

WIN-NITT collaborated with **Craftruck** for conducting the International Women's Day Celebrations 2022 and the WIN-NITT Ideathon. They supported the event by providing tokens of appreciation for the event's guests and judges.

CryptoNITT is an open-for-all community focussed on educating and upskilling developers on Blockchain technologies. The community will provide the necessary support for upcoming DApp developers to gain the required knowledge, skills, and experience to explore Blockchain's vast potential.

Initiatives Taken

Launch of Instagram and Twitter handles of the community for getting better traction and for ease of communication with the student community of NIT Trichy.

Blockchain Summit 2021

CryptoNITT partnered with YBlockchain, a global web3 community with the mission to enhance adoption and scale of blockchain technology, to present Blockchain Summit 2021, that happened from October 15 - 17. Distinguished blockchain professionals ready to dissect the conducted webinars and hands-on sessions.

Under the Summit the sessions that were conducted are

- An introduction to Blockchain and Cryptocurrencies by Jason Rodrigues (NITT Alumnus)
- Building and deploying Decentralised Applications, a live code-along session
- Setting up your first crypto wallet by Jason Rodrigues

Blockchain 101

CryptoNITT associated with Tezos India to bring "Blockchain 101" for Web3 enthusiasts who were new and wanted to explore and experiment the domain. Mudit Marda Co-founder and CTO Drife and a blockchain Tech Analyst at Tezos India graced the event as the speaker and enlightened the students who participated.

Web3 Workshop

Hands on Web3 workshop was conducted for developers curious about web3 but not sure where to start. The workshop helped students to get started building on the Blockchain, covering fundamentals and was provided with all the necessary resources

Technical Clubs' Report

180DC

Term Report

180DC

FOREWORD FROM THE PRESIDENT

The year 2021-22 has been a year of embracing changes and getting adapted to the new world. With a strong foundation laid by the ex-leadership team, the current 180DC NITT has achieved its annual goals successfully in terms of projects, collaborations, impact on stakeholders and achievements.

There is no doubt that the world of business as we know it will be altered after COVID-19. However, we at 180DC NITT believe that by working together and partnering with mission-driven businesses and organizations, we can overcome any obstacle, just like we have always done. To assist us in our journey, we were fortunate to have established collaborations with multiple partners and organizations under the mentorship of esteemed industry leaders. "Creative Ideas. Practical Action. Lasting Change". The team has worked on 10 projects with startups (YC backed) and NGOs, creating a lasting impact on all the stakeholders. We have successfully achieved this academic year's goal of extending our services to international clients and improving the quality of project deliverables.

We are also extremely elated to announce our partnership with the likes of PwC and Rocketblocks, amongst other industry giants. We look forward to strengthening these connections in forthcoming years.

We have fostered the culture of case competitions, which can be witnessed by the team's achievement of securing 8 podium finishes, both nationally and internationally. All of this would not have been possible without the constant support from the Students' Council and Technical Council, and we wish to extend our heartfelt gratitude to both these student bodies. We are grateful for everyone who was part of this journey in different ways to make it what it is today.

Finally, as the saying goes, "The strength of the team is each member. The strength of each member is the team". We at 180DC NITT resonate with this and wish to appreciate every member of the team for their contributions. We are thrilled to see what the future holds in store for the club. As we always say. Onwards and Upwards!

INITIATIVES/PROJECTS TAKEN UP THIS YEAR

AppX
AppX is a YC backed startup that empowers edtech through carefully customized software solutions.

Tamasha

Tamasha, the next-generation interactive entertainment platform. We are a stealth-mode startup in the Real Money gaming space, with a vision to disrupt gaming through live social engagement. Tamasha is started by alumni of IIT Bombay and funded by marquee investors.

Pakka Profile

PakkaProfile is a one stop shop for assessments and recruitment. PakkaProfile's Game Based Assessment helps evaluate candidates objectively based on their personality competencies, cognitive abilities and language skills- all under one roof! Using sophisticated ML & AI algorithms, we compare job seekers against benchmarked employees to help our clients find the right fit.

Charco Neurotech

Charco Neurotech is a Cambridge based med-tech start-up that aims to reduce the pain of people suffering from stiffness and slowness caused by Parkinson's Disease. CUE1 (Charco Trademark Product), a focused vibrotactile stimulation device, has granted all of the pilot participants improved movement.
Over 10 million patients across the world suffer from Parkinson's disease and Charco Neurotech aims to reduce their pain through CUE1.

Hoggy

Hoggy is a Kid's platform that focuses on providing interactive learning for kids aged between 2 to 5 years, while maintaining absolutely safe space for kids.

FindHope

FindHope is a mental health based startup based out of Hyderabad, India which focuses on making mental health support accessible to everyone. They provide access to clinically certified mental health counselors for free.

iVolunteer

iVolunteer is a social enterprise that promotes volunteering with the mission to bring volunteers and organizations together to share time, skills, and passion to promote India's social development. The project is primarily about gathering insights on how NGOs should go about acquiring, engaging & retaining student volunteers. We also analyze the current problems NGOs face with student volunteers (through secondary as well as primary research). We also validate the financial viability of the model iVolunteer has proposed by surveying institute level decision makers.

NalandaWay

NalandaWay Foundation is an award-winning NGO, which uses visual and performing Arts to help children from disadvantaged communities in India. Our endeavor is to improve learning abilities, reinforce positive behavior and help children soar high by enabling them to be creative and express through Arts.

SaveIn

SaveIN is a fintech platform that aims to revolutionize how Indians access on-demand credit. We are building novel financial products and experiences in a 100% digital, paperless and mobile first ecosystem.

Timetable draft for NITT students

Drafted the weekly timetable for students across all departments in NITT for the academic year 2021-2022

EVENTS CONDUCTED AND RELATED INFO

CounterPlot

CounterPlot is a series of 3 engaging events mixed with strategy organized exclusively for the batch of 2024. Participants had to form a group of 2-3 where the benchmarks break and the best ones to survive shall grab prizes worth 5K.

Sangam Case Competition

Sangam, the intra-collegiate technical competition, in partnership with 180DC NIT Trichy this year, brings a platform for business enthusiasts to come together and bring out innovative ideas.

Conclave

Conclave is an InterNIT competition that takes place on an annual basis. As the host college for the 2022 edition, our college's Technical Council partnered with 180DC NITT, the official management consulting club of NIT Trichy, to conduct a case competition called 'Pitch Perfect'. The event saw an active participation of 40+ teams, 4 of whom passed the preliminary rounds to reach the finals. The case competition was judged by consultants from McKinsey and BCG, Rishabh Mahnot and Nikita Lewis.

ACHIEVEMENTS

- National finalist, HSBC India Business case competition 2022
- National Finalists, Econjecture, IIM Indore Economics Case competition
- 3rd place in Dhruva, IIM Trichy case competition
- 2nd place in IMT Ghaziabad case competition
- National Finalists, Sustainable Housing 2030, IIFM Bhopal, 2021

- National Finalists, BVEST 2020, BVCOE
- National Semi-Finalists, MICA Impetus 2.0, 2021
- IIMC Gray matters, National finalists

COLLABORATIONS

Seekho - Event partner
Seekho is a growing startup that aims at providing industry-relevant education and job opportunities to every youth in an engaging, affordable & scalable way. We collaborated with Seekho to promote a session on "Creating presentations like a consultant" by Abhinav Sengupta (Manager @ PwC).

Rocketblocks - Case prep resources partner
Rocketblocks is an all-in-one interview preparation platform helping aspiring consultants land jobs in top-tier consulting firms. We partnered with them, procuring a student discount for using their resources to upskill the team.

BharatX - Case study competition partner
BharatX is a YC-backed FinTech startup founded by NIT Trichy students. We collaborated with them on a case study competition (Conclave).

Mentors - Collaboration with industry experts

1. Mr. Anandapadmanaban - The Boston Consulting Group
As a partner at The Boston Consulting Group with deep experience in advising large financial institutions (Banks, Insurers, Regulators & other FIs) on Customer Journeys, Digital, Strategy & Transformation across three geographies – India, North America & South East Asia, Mr. Anandapadmanaban acts as a go-to person for our strategy-related queries. He is also an alumnus of NIT Trichy.

2. Ms. Ramya - AT Kearney
As a partner at The Boston Consulting Group with deep experience in advising large financial institutions (Banks, Insurers, Regulators & other FIs) on Customer Journeys, Digital, Strategy & Transformation across three geographies – India, North America & South East Asia, Mr. Anandapadmanaban acts as a go-to person for our strategy-related queries. He is also an alumnus of NIT Trichy.

3. Alvarez & Marshal - Satyajit
With 22+ years of experience in a niche industry such as steel & acting as the present director of Alvarez & Marshal, Mr. Satyajit das helps our club members upskill themselves.

4. **Karthik vinayagamoorthy - CAAPID**
   As one of our past client turned mentors, Mr. Karthik Vinayagamoorthy regularly interacts with the team on different topics, expanding our point of view & knowledge every single time. He is a part-time entrepreneur & a full-time consultant.

5. **Aditya Muralidhar - Bain & Co.**
   As a senior manager at Bain having experience working in PE, Consumer Tech & Healthcare, Mr. Aditya Muralidhar engages with the team on different core aspects such as the project engagement model, handling client relationships, etc.

2021 - 2022
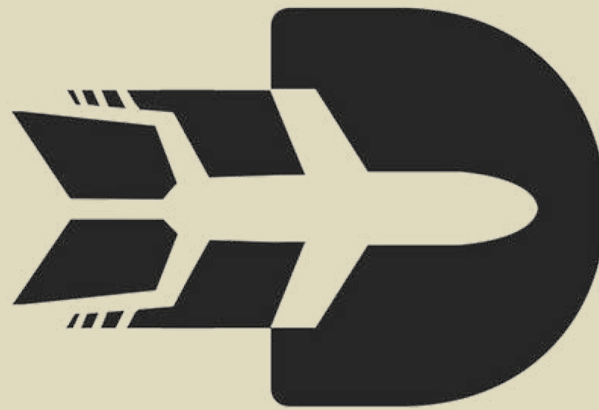
THE 3ᴿᴰ DIMENSION

AEROMODELLING CLUB OF NITT

Term Report

FOREWORD FROM THE PRESIDENT:

It has been an amazing year overall for the club, core team 2021-22 took a lot of new initiatives and explored the unexplored paths and leaving no stones unturned right from getting sponsors, conducting guest lectures, networking with alumni and other aeromodelling clubs across India and abroad too, strengthening our fabrication and piloting skills and establishing our marketing and design teams, forming 3D community accessible by every student of NITT, streamlining and narrowing down the aero domain by demarcating it into structures, aerodynamics and avionics, starting rocketry and student satellite domains in the campus, which is first of its kind in the college.

INITIATIVES/PROJECTS TAKEN UP THIS YEAR:

- **E-Yantra:** A project based robotics competition organized by e-yantra set up by IIT Bombay and Ministry of Education. Our project theme was strawberry stackers that reduces physical toil on strawberry farms by making strawberry stacking for transport an automated process using multicopters. We applied the concepts of control systems, image processing, mission planners and distributed systems, while using the typical software stacks used to control flying vehicles and plan missions for them.

- **CNC cutter:** It is a tool that we developed, which streamlines the process of making the wing of a plane. In the process of fabricating a plane, previously a major portion of the time was invested in fabricating the wing of the plane, and a small percentage of error in the structure of the wing affects the performance of the plane drastically. With this development of a CNC cutter, the fabrication of the wing is fast-forwarded, and the error in the structure of the wing is reduced to less than 1%.

- **Vertical Takeoff and Landing(VTOL):** Since the demand for this type of fixed wing RC plane is booming due to its versatility, we decided to take it up as a project and add our innovations to it. Our design is unique in terms of positioning of rotors and the transitioning mechanism from VTOL to glider and vice-versa. The application includes surveillance and carrying pay-loads in difficult terrains and during disasters. We presented this idea in Techfest 21-The technical fest of IIT Bombay and were among the top 15 teams.

- **Albatross :** The current demand in the market of energy efficient, electric emergency vehicles has been on an all time high, with multiple forest fires and other forest dangers. This project aims at making a fixed wing energy efficient glider capable of image processing capable of detecting fires and signaling its location to the nearest emergency operatives.The UAV has the capability to fly for 2 weeks straight without landing.

- **Butterfly fish:** This project aims to design and develop a fixed-wing unmanned vehicle capable of operating in both aerial and underwater conditions, with repeated transitions exhibiting the properties of an aircraft and submarine simultaneously in one single design. This project addresses and tackles the challenges of dynamic transitions between air and water.

- **Flipkart Grid:** GRID is Flipkart's Flagship Engineering Campus Challenge which provides us the opportunity to apply our technical knowledge and skills, to compete and complete key challenges. Flipkart GRID brings Live Problem Statements from the world of E-Commerce to the brightest minds of India and lets us put your capabilities to the ultimate test.

UPCOMING INITIATIVES:

- New sub domains in our club - Rocketry and Student satellite program.
- Inductions for dedicated marketing and design teams for the club.
- **Campus Development Initiative**
  - College Bus Tracking System, which runs on Android smartphones. This enables students to find out the location of the bus so that they will not get late or will not arrive at the stop too early. The main purpose of this application is to provide the exact location of the nitt buses and provide information like bus details etc. It is a real time system as the current location of the bus is updated every moment in the form of latitude and longitude, which is received by the students through the application.

ACHIEVEMENTS:

- TechFest 2021 IIT Bombay – AL VTOLA One among Top 10 Finalists – 100+ teams participated across India
- Tathva, Technical fest of National Institute of Technology Calicut – Aviate 2022 first place – Team 3D
- Pragyan – Sangam 2022 Energy and Environment – Second place – Team Albatross
- Got sponsorship from Solidworks (a reputed CAD modeling and simulation tool) for SAE Aerothon 2022

Builders' Hive

Term Report

INITIATIVES/PROJECTS TAKEN UP THIS YEAR

Blogs
    A. Augmented Reality in the construction   sector
    B. All about breathe bricks
    C. Carbon negative concrete
    D. What went wrong - A peep into some of the worst construction disasters in history
    E. A sinking dream
    F. Thermal bridging
    G. PV Glaze - revolutionary tech
    H. Smart cities: Cities of the future
    I. Structural health monitoring of bridges

Participating in various competitions to get wide exposure

Sangam
    Kinetic Speed breakers: Kinetic speed breakers are the one that uses the kinetic energy of the vehicle and it Converts it into electrical energy where we can produce electricity by keeping the speed rollers on the road near the highway with the maximum flow on the road. It uses a gear system where the outer ring rotates at the slower RPM and the inner one rotates at a higher RPM. This model was shown at the Sangam exhibition during Pragyan, which happened in March 2022.

Fire and bulletproof tent: This project involves in making of tents that have the properties of both fire and bulletproof. This is the unique idea by the team builder's hive which aims to produce, a low-cost tent with eco-friendly nature.

Piezoelectric powered flashlight in walking stick: Walking sticks as crucial aids among the weak and elderly to help maintain balance and ensure a better posture for their day to day activities. When fitted with flashlights, these sticks could help people with mobility issues or injuries walk safely. However, regularly changing the disposable batteries in the sticks could be a hassle for the elderly and also causes environmental damage if recycling is not done. An appropriate solution for this problem could be to use piezoelectric transducers that sense pressure and produce electricity to power the attached flashlights in these geriatric assistive devices. This reduces the use of disposable batteries while also solving the problem of carrying an external flashlight.

Techfest by IIT Bombay
Electric Vehicles
The supply chain of Electric Vehicles: Through this project, the aim was to identify the challenges in the sustainable supply chain of EV batteries and to find out solutions for the same from the policy perspective. Also, the team brought out certain policy recommendations for making the EV battery supply chain more sustainable.

Innovative strategies for the electrification of heavy-duty vehicles (HDVs) - This report aims to provide innovative solutions for the electrification of heavy-duty vehicles, focusing on the following aspects: Battery technology, Charging facilities, Business model to accelerate adoption, Policy/programme from the central or the state government.

Delta Force

Term Report

DELTA FORCE

FOREWORD FROM THE PRESIDENT:

Delta Force is a close-knit community of computer enthusiasts who enjoy coding and developing impactful software. Despite the ongoing COVID-19 pandemic, the inductions were organized methodically and proved valuable for the freshers who applied.

The thirst for exploring niche technologies and working on groundbreaking projects spanning various domains like Development, Machine Learning, and Blockchain seemed on an ever-increasing trend.

Delta continues to be a club that comprises the most brilliant minds, who excel in whatever they choose through sheer passion and perseverance. I wish the next core the best of luck and hope to see them create a bigger difference in the upcoming academic year.

INITIATIVES/PROJECTS TAKEN UP THIS YEAR:

- **Research Portal**, a website to look at existing research projects and labs that are present in the college was successfully launched and is used by faculty members, research scholars, and students.

- **Dashboard**, an all-in-one portal consisting of various student activities like mess registration portal, Bills Portal for uploading bills for club expenses was launched successfully.

- **Scholarship Portal,** was successfully launched and was used by students and the council extensively for applying and awarding scholarships to students.

- **NITT site** was revamped from scratch to give a better user experience. It is yet to be released by Admin.

EVENTS CONDUCTED AND RELATED INFO:

- Conducted Attack on Robots event as part of Pragyan'22 under Manigma cluster which received participation of over 150+ participants.
- Conducted Beer Factory event as part of Pragyan'22 under Manigma cluster which received participation of over 200+ participants.
- Conducted Code Character event as part of Pragyan'22 under the Bytehoc cluster which received participation of over 200+ participants.
- Conducted Dalal Street event as part of Pragyan'22 under Manigma cluster which received participation of over 400+ participants.
- Conducted Outbreak Origins event as part of Pragyan'22 under Manigma cluster which received participation of over 100+ participants.
- Conducted Pragyan Premier League event as part of Pragyan'22 under Manigma cluster which received participation of over 300+ participants.
- Conducted Pragyan CTF event as part of Pragyan'22 under Bytehoc cluster which received participation of over 700+ teams all over the world.
- Collaborated with CSEA in conducting a workshop on Blockchain Technology which received the participation of over 150 students from various colleges.

Conducted Labyrinth, an online cryptic treasure hunt as a part of Pragyan'22 under PHRONESIS cluster which received participation of over 200 participants.

Designers' Consortium

Term Report

FOREWORD FROM THE PRESIDENT

We are the Designers' Consortium, a set of forty-two aspiring design enthusiasts with a perpetual thrust for innovation from various engineering backgrounds. We began our journey in 2015 as a fourteen-member team, and have passionately advanced to become the official Product Designing Club of NIT Trichy.

Our main aim is to identify key problems that hamper the comfortable living of the diverse sections of our society, and provide with an answer to their needs. To defy the various odds in the way, design a solution satisfying requirements and deliver a product championing the standards is our motto.

INITIATIVES/PROJECTS TAKEN UP THIS YEAR

Sangam

1) C-BASS:

The primary aim of this project is make a system to detect and non- lethally stop maritime vessels invading or evading naval perimeters, the intent of which is unknown. The goal is to develop a portable product that can be mounted on host navy ships, the working of which would be semi-automatic.

2) CALTEC

The aim of the project is to make a system of bots that detects and deters the marine animals and birds near the oil spill area by fitting to oil booms. They also provide aid in rescuing those which are already affected.

3) ICTALMATE

The objective of the project is to detect and mitigate seizure such that a person having seizure is safe even with no one around him/her for first-aid assistance

Campus Development Initiatives

1. Elevator sanitation
2. Luggage carrier for cycles
3. Volleyball court line maker

Upcoming Initiatives:

Technovation:

Workshop conducted on theory sessions for mechanisms, design thinking, product development and 3D CAD modelling.

Certified SolidWorks Associate (CSWA) training session by our SOLIDWORKS sponsor "SIMTEK":

A two day training session covering the features from basics to advanced level required for the CSWA certification shall be done by industry professionals from our sponsor "SIMTEK".

Achievements

The following projects have won prizes in Sangam - Pragyan hardware hackathon 2022.

- CALTEC (1st)
- C-BASS (3rd)

Secured **sponsorship from SOLIDWORKS** (a reputed CAD modelling and simulation tool) and ANSYS (a reputed multiphysics simulation software) that provides us access to an array of resources ranging from software utility to mentorship.

IEEE Xplore publications after being presented at the 9th International Conference on Robotics and Mechatronics 2021.

- Conceptual model for improving manoeuvrability in borewell rescue devices. Paper
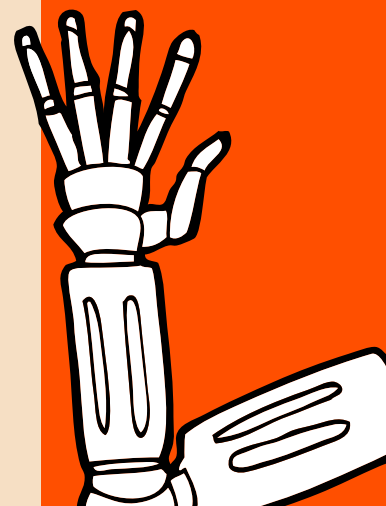
- Conceptual model for improving manoeuvrability in borewell rescue devices. Paper
- Upper and Lower limb interchangeable Exoskeleton-robot for post-stroke rehabilitation. Paper
- Design of a Powered Multi-Tracked Stair Climbing Carrier with Loading Capability into Automobiles. Paper
- Design of a Remotely Operated Vehicle (ROV) for Biofoul Cleaning and Inspection of Variety of Underwater Structures. Paper

The following paper has been accepted at the 2nd International Conference on Robotics and Artificial Intelligence 2021

- Robotic arm for brake performance testing

2021 - 2022

E-Cell
NIT Trichy

Term Report

FOREWORD FROM THE PRESIDENT:

When we started this year, we realized that ECell needs a fundamental change in its fabric - moving from conducting grand events to nurturing nascent student startups! The previous core took the founding step by establishing a team specifically for this called Research & Pre-incubation which I personally headed. Looking back, while it was just a pilot experiment, the results and enthusiasm inside & outside the club definitely points in this direction.

We incorporated a soft change this year, trying a mix of both, and aim to move into more pre-incubation based activities instead of events starting from the next core transition. Simultaneously, we had grand events and an even grander ESummit, where we managed to get exciting speakers, events & workshops.

Exciting times ahead!

INITIATIVES/ PROJECTS TAKEN UP THIS YEAR :

Headstart '22 (December '21 - March '22) :
This was a completely student run 6-week pre-incubation initiative. E-Cell members acted as student mentors for candidates allotted to them, giving constant feedback and having weekly touchpoints. The members themselves were upskilled in advance through an internal curriculum. A total of 28 candidates had applied, and were often in different stages of their entrepreneurial journey. They were mentored accordingly, and for students in an advanced journey, we connected them with alumni from RVC (Rockfort Ventures).

SIP (Startup Internship Programme) :
Startup Internship Programme was a program designed to provide exciting startup internship opportunities to mainly 2nd years from NITT. It was a grand success, with 334 applicants applying and 34 students finally securing their internships!

Smart Notebook:
Smart Notebook project is a very informal project which is based on designing a notebook which bridges the gap between paper and web based note taking apps. Have 2 ideas which are in a very early stages.

EVENTS CONDUCTED AND RELATED INFO :

E-SUMMIT (APRIL 8,19,10 '22) :

Guest Lecture #1 - Arpit Agarwal (8th April) :
This was the inaugural guest lecture by our Alumnus Arpit Agarwal, who touched upon the points of starting up as a first time founder and challenges of a first time founder.

Guest Lecture #2 - Mukund Kulashekaran (9th April) :
This was the second guest lecture which was conducted online. He is also our alumnus and is the current business officer of Urban Company. He touched upon his journey, and also very willingly answered questions from the audience.

Guest lecture #3 - Mohanraj J :
We invited the CEO of Duroflex down who shared his life journey and his life experience. His core takeaway was about embracing failure, and why to "fail forward".

Guest lecture #4 - Arun Prakash :
The final guest lecture was delivered by Arun Prakash, who is the CEO of Guvi Geek, an edtech startup. He prepared a very tailored speech, answering all the common questions an aspiring student entrepreneur will have before launching his/her start-up.

Content creators conclave :
To present a larger overview and not just from startup launchers point of view, we included 3 prominent youtubers to share their journey and answer interesting questions from students in an online fireside chat. The youtubers were Kalpit Veerwal, Jason Samuel, Sahil Khanna and Madhavan.

NFT Workshop :
We collaborated with YBlockchain to have a free online workshop where students learnt the basics of making NFTs and also got to make their own free NFT as a giveaway at the end of the session!

EV Automation workshop :
We collaborated with E&Y to have a free online workshop on EVs (Electric vehicles) and possible automation which can be introduced.

PMX case study workshop :
We conducted a product management competition with our title sponsor, BharatX where the objective was to improve on an existing product and come up with feasible solutions.

IPL Auction :
This event was a play on IPL, where people had to buy players in a reel life IPL auction.

Shark Tank:
This was a fun event meant to parody the concept of Shark Tank, byasking participants to put on their VC hats and start investing in past startups, with imaginary money.

Breakthrough :
This was our main B-Plan competition, where winners of the competitions got to pitch to exciting startup incubators, along with generous cash prizes.

NIT CONCLAVE (5TH MARCH '22)

VC Panic / Shark tank :
Mentioned above, in E-Summit "Shark Tank" heading. Was conducted for outside participants too.

Startup Shipwreck :

A fun event where participants had to roleplay as startup founders who have to defend their (questionable) startups to the media. It was a grand success, with over 30+ participants and was judged by Tanya Singh.

"STARTUP MYTHBUSTER" LECTURE (JANUARY '22) :

Organized an online guest lecture by Mani Lankarraju who broke down some common misconceptions about a first time entrepreneur and startups in common.

CAMPUS DEVELOPMENT INITIATIVES :

SIP (Startup Internship Programme) :
Mentioned above.

Hult Prize :

Hult Prize is an annual international B-Plan competition which aims to solve problems based on UNDP goals. We conducted 3 startup workshops as part of the preparation for the workshop, but the competition had to be terminated due to issues arising from Hult Prize headquarters.

COLLABORATIONS :

Hult Prize :
Mentioned above.

iCreate :
Partnered with us for a EV sector related startup competition, and asincubator for the winners of breakthrough.
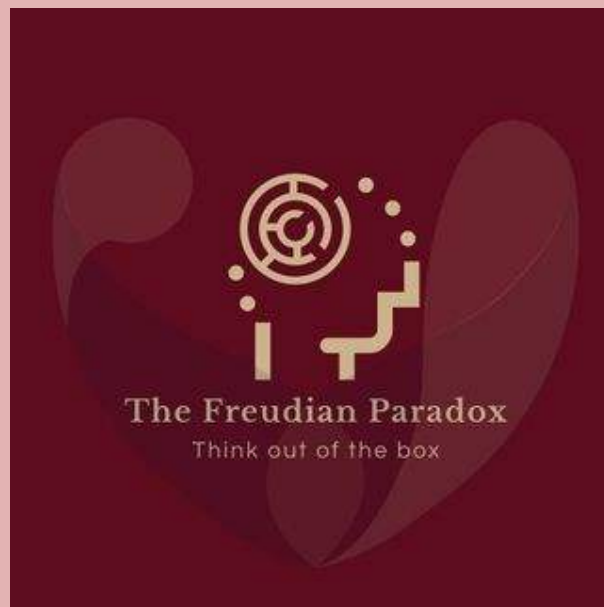
THE FREUDIAN PARADOX

Term Report

THE FREUDIAN PARADOX

FOREWORD FROM THE PRESIDENT:

The Freudian Paradox is a Cognitive Science club dedicated to ideas of Analytical Psychology and Mathematical Philosophy.

With the forthcoming data revolution we cannot deny that Data Analytics and Cognitive AI will be one of the prime areas of research and interests in the scientific community, and in this cognitive revolution analytical psychology and mathematical philosophy have their roots in understanding about the brain.

Using these ideas we will learn how cognitive ability and consciousness be integrated in Artificially Intelligent systems behavioral economics and other applied sciences which often gets neglected statistically know as Unconscious Bias.

The club will also promote studies in Human Sexuality and Sexual Fluidity. No institution in India as of now have a certified course or a dedicated club that promotes the study of Human Sexuality and NIT Trichy could be one of the firsts to take progressive step in this regards.

EVENTS:

INDUCTIONS:

Induction conducted in the month of November, 23 people inducted with a total of 37 members excluding the 4 core members of the club.

FREUDIAN FAUX PAS:

The Cognitive Science Podcast discussing aspects of Artificial intelliegnce and Neuroscience.

WORKSHOPS AND SESSIONS:

Queer & Psychology related worksops, counselling and mental health related sessions.

OTHERS:

Intra Club Presentations between UCSD, Edimburgh University & TFP.

An International Organization Recognized by The Swedish Cognitive Science Societies, that is a network of student led Cognitive Science Societies around the world. The Universities within this network are: National Institute of Technology Trichy; University of Edinburgh; Institut Fur Kogniton Swissenschaft Germany; University of Cambridge; University of Arizona; University of San Diego
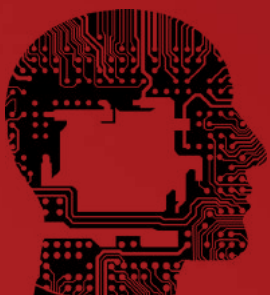
PEOJECTS AND COLLABS

1.COGNITIVE RECONSTRUCTION OF CROWD EMOTIONS:
- Having Problem Creating Targeted Political Campaigns ?
- Manage Crime Hotspots in Cities.
- Can't figure our why a specific branch of your franchise is bleeding ?
- Want to find out real time EQ of crowds on product launch
- Movie/Advertism ent First Preview-Reactions ?

SO HOW ARE WE DOING IT ?

1. An Infrared setup to capture real time images of the crowd
2. Depth cams to map end to end images.
3. Image stitcinh and smoothing with DCGANS
4.Analysed by our TinyFaceALgorithm
5.Randomised statistical test to predict EQ

We can predict in a crowd of 3000s
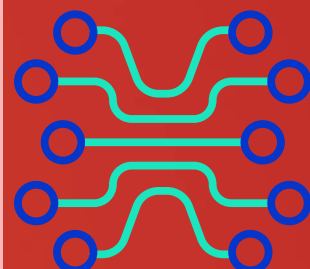
2. A LEARNING APP FOR STUDENTS WITHLEARNING DISABILITIES.

The app is targeted towards students and other people with learning disabilities. It provides them with the necessary information and resources in order to help them learn better.

Learning disabilities are a very common issue in today's society. There are many people who have a hard time learning because of this disability. This leads to many problems, such as not being able to get a job or even get an education. With the help of this app, these people can be able to learn better than they would without it.

The app is a one stop shop for people who have dyslexia and ADHD. It is targeted towards teachers, students and parents.

The app will help people with learning disabilities to better understand the material they are studying. They will be able to use this as a tool in their everyday lives to help them study, research or read.

people with learning disabilities are often marginalized and not given the opportunity to excel. Teachers will be able to get a better understanding of their students and know when they need help.

We are using Flutter with Firebase backend for the development of our app.

3. WEBSITE DEVELOPMENT FOR INOCS

We succesfully developed our website for the INOCS conference.
We hosted the club data and the other universities' club data, and cretaed a registration portal for the same.
We have concurrently started registration for the Conference.
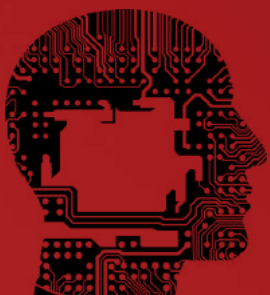
## 4. A FIRBIT API TO TRACK AND MONITORED SYMTOMS OF MANIC DEPRESSIVE DISORDER

A fitbit api to track and monitore symtoms of manic depressive disorder

This API is a way for people who are suffering from manic depression to monitor their symptoms. It has the potential to help people living with the disorder by providing them with tools that will help them better understand their mental state.

It is important to track and monitor the symtoms of manic depressive disorder. This is because it can be a symptom of bipolar syndrome, which is a serious mental illness.

The fitbit API allows you to track your activity levels, heart rate and sleep patterns. This can help you identify when your symptoms are worsening or improving. The app and API also provide social support networks for people with the same condition as you.

We are consulting and working with Psychologists to better analyse and study the problems and make it more effective.
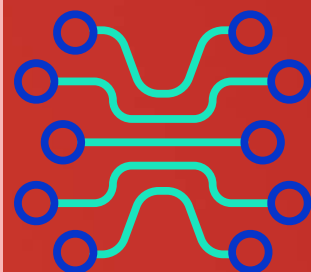
CAMPUS DEVELOPMENT PROGRAMME

·Open speaking sessions, twice in a Month for the students with or without collaboration with 'Hope' to talk about issues troubling them etc.

·Creating a safe space for LGBTQ+ students, and hearing their views and increasing awareness and improving campus life by conversing with more Queer groups and bringing inclusivity.

·Organizing Rainbow Fest

·Having Pride Mentors to address the issues of Queer people in the campus, and making the campus
a lot more open to these ideas and making them a lot more accepting.

·Celebrating Pride Day by inducing talks, seminars, webinars putting up banners, and decorations accordingly.
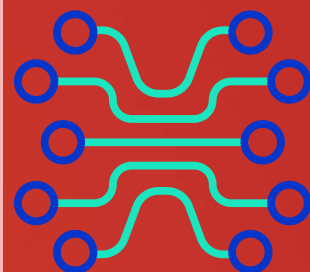
2021 - 2022

GRAPHIQUE

Term Report

GRAPHIQUE

FOREWORD FROM THE PRESIDENT:

Graphique has evolved exponentially in the last one year, through various activities and participation in various events. The members have honed their skills in graphic design and our activities have helped non club members also to learn the fundamentals of it. It won't be an overstatement to say we have been one of the most active clubs in campus in the past one year.

INITIATIVES/PROJECTS TAKEN UP THIS YEAR

FESTEMBER:
Ideating and designing social media content and branding for Festember 2021. Over 500 designs made so far.

PRAGYAN:
Ideating and designing social media content and branding for Pragyan 2022. Over 500 designs made so far.

36 DAYS OF TYPE 2021:
Participated and successfully completed the yearly 36 days typographic design project promoting space for creation across the globe.

MONEY HEIST X NITT:
We presented NIT Trichy, a glimpse of our campus, rendered in 3D minimalist POV of the Money Heist intro.

CHAPERONE:

Chaperone is series of videos where we showcased the process that went behind the artwork we've done for our partner organisations and which you've appreciated.

NETFLIX REDESIGN:

Redesign of the popular video streaming platform - Netflix's UI.

WALLPAPER WEEK:

The students of NITT were bestowed with high quality wallpapers everyday for a week on Graphique official Instagram handle and website.

ROADS TRAVELLED:

We were proud to work on the magazine "Roads Travelled: Past, Present and Future" documenting the performance trajectory of NIT Tiruchirappalli in the last five years. The magazine takes you through how our institute has grown over the years, sailed through the hard times and what lies ahead!

T&P BROCHURE 2021:

Commissioned by Training and Placement Cell of NIT Trichy to design UG placement brochure for the academic year 2020-21.

INKTOBER CHALLENGE:

Participating in a 31 day challenge to improve inking skills and develop positive drawing habits.

PROJECT AURA:

We explored diverse shades of colours to understand the emotions linked with each one. It was a project to embody this eccentric phenomenon that transcends human perception.

PROJECT LOOKBACK:

Project Lookback was a throw-back to the major events that happened in the year 2021. A set of 3 posts each of 9 portraits were posted on our Instagram handle.

NITT TV BRANDING:

Branding for NIT Trichy official youtube channel

ART VS ARTIST 2021:

It was a design campaign where members of our club created a portfolio of their works.

WORKSHOPS & EVENTS CONDUCTED:

GRAPHIQUE BOOTCAMP 2021:

Bootcamp was a free comprehensive workshop on the basics of Graphic Designing and Motion Graphics exclusively for the first year B. Tech / B. Arch students of NIT Trichy. It was conducted during the month of June 2021. Students were engaged with exciting tasks and Interactive sessions.

GRAPHIC BY GRAPHIQUE 2022:

Graphic by Graphique was a free comprehensive workshop on the basics of Graphic Designing and MotionGraphics exclusively for the first year B. Tech / B. Arch students of NIT Trichy.
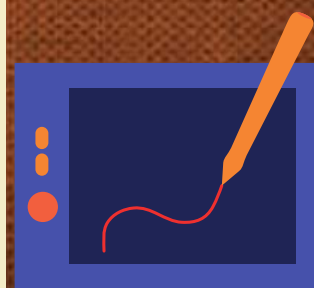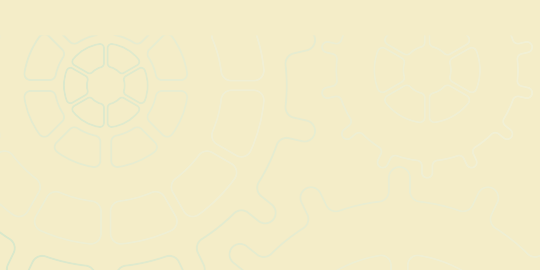
CHROMA:

Chroma by Graphique was a graphic design contest conducted for the 1st students conducted in the month of January. The contest was held in two formats (digital and traditional art). Two industry experts were invited as Judges: Kamala Nair (Digital Art Judge) and June Digan (Traditional Art Judge).

NITT DESIGNATHON:

It was a 24-hour online hackathon as part of NIT ConclaveX for designers and developers, providing a platform to compete against the best design and developing minds across the country in a fast-paced environment and test your design thinking practices. Hone your design and developing skills by responding to evolving needs and solving challenges in our community and beyond to create resilience, hope, and inspiration.

TIMELINE WORKSHOP:

Timeline workshop is a curated and exciting workshop on Video Editing, Colour Correction, 3D Art and Motion Graphics. An excellent opportunity for the first year students to add new skills to their skillset!

COMPETITIONS & CONFERENCES:

STRATE DESIGN CONTESTENTRIES:
Participated and got endorsed by Strate School of Design, Bangalore in an online poster design contest among 200 entries.

FMC WEEKEND:
Participated in 5 Design and Art Events conducted by IIT BHU as a part of their cultural festival.

MARCH OF ROBOTS:
Participated in an online design challenge to create robot character design for one whole month.

KURUKSASTRA DESIGN EVENTS:
Participated in 3 Design and Art Events conducted by Sastra as a part of their cultural festival, Kuruksastra.

99U CONFERENCE
Attended an online conference that inspires creatives to supercharge their work, build incredible careers, and ideas.

SAARANG

Participated in IIT Madras's Saraang Designathon, a four-hour designathon based on 2D & 3D design problem statements. Our Club Members Yuvaraja and Raswanth secured 1st Place in Motion graphic Eventand. Our club Member Manasa secured 2nd Place in Digital Face painting. Our club member Sarvesh participated in an event called "Photoshop Battle" and secured 2nd place.

D'CON
Our club members attended a Design conference, called D'Con 2022 which was an eye-opener and provided us with a depth to the concept of Design in a Broder perspective.

ACHIEVEMENTS

- FIRST PLACE, MOGRAPH EVENT, IITM – SARAANG

- FIRST PLACE, POSTER DESIGN, IFP

- 6500+ FOLLOWERS ON INSTAGRAM OF ROBOTS:

- 50K+ VIEWS INSTAGRAMTRA DESIGN EVENTS:

- SECOND PLACE, PHOTOSHOP BATTLE, IITM – SARAANG

- SECOND PLACE, FACE PAINTING EVENT, IITM – SAARANG

- OPEN SOURCE CONTRIBUTOR

- 1500+ ARTWORKS MADE IN 2021–22
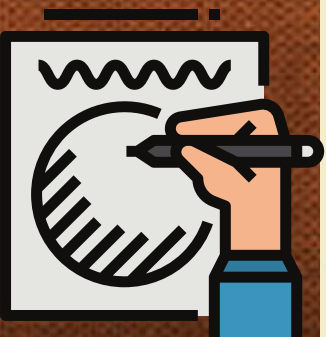
MAXIMUS

Term Report

MAXIMUS

FOREWORD FROM THE PRESIDENT:

We at Maximus work and thrive on creating a lively environment for math enthusiasts to improve their knowledge and conduct events to share the same with others. The last two years being majorly online has limited the events we can conduct. Also, the Program Pedagogy, a Math and Programming teaching initiative for the freshers, had to be paused due to online mode and irregular 1st-year calendars. We hope soon to resume all the fun activities and teaching programs from next year when the situation normalizes.

INITIATIVES/EVENTS TAKEN UP THIS YEAR:

1. Induction cum Hackthon conducted for 2nd years as well as 3rd years for lateral Inductions.
2. Conducted and created questions for M-Decoder, an event of Pragyan 22 as part of the Phronesis cluster, which received 100+ participants.
3. Take part in Number Ninjas, a inter-college math competition conducted by H.R College of Commerce and Economics, Mumbai.

ACHIEVEMENTS

1. Overall runner-up in Number Ninjas, a inter-college math competition conducted by H.R College of Commerce and Economics, Mumbai.
2. Won 4 out of the 7 individual events and came 2nd and 3rd in one event each.
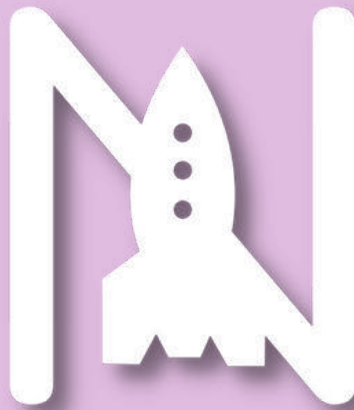
NAKSHATRA
THE ASTRONOMY AND SCIENCE CLUB

Nakshatra

Term Report

NAKSHATRA

NAKSHATRA
THE ASTRONOMY AND SCIENCE CLUB

FOREWORD

Nakshatra is the Astronomy and Science Club of NIT Trichy. We are a group of enthusiasts who publicise and foster astronomy among both 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.

EVENTS CONDUCTED AND RELATED INFO

Stardust

Stardust is Nakshatra's flagship annual event, and it is open to school and college students all over India. Stardust 2021 happened in online mode from 23rd to 26th July. It featured the following events:

Faculty Lecture: The lecture was given by the then FA, Dr Justin Joseyphus on the topic "Introduction to Cosmology" on 23rd July, over MS Teams.

Student Lecture Series: A recurring feature of Stardust, this event involves club members giving a talk on astronomy and astrophysics concepts. This year, BK Sivaraj spoke about "Discovering the cosmos" on 24th July, and Pujan Yadav spoke on the topic "Paradoxes" on the same day.

Guest Lecture: Dr Philip Moriarty from the University of Nottingham, UK, delivered a lecture on "When the Uncertainty Principle goes to 11", on how quantum mechanics concepts can be understood through heavy metal music, on the 25th of July, over MS Teams.

Poster Design Competition: Contestants were given the following topics -
Comet Mining and Mission: Moon Colony and a 72-hour deadline for submission of a poster. Cash prizes were given to the top 2 submissions.

Creative Writing Competition: Similar to the poster design event, the topics for this included "Astronomy 300 years in the future" and "How would the world function if all artificial satellites suddenly disappeared?". Cash prizes were given to the top 2 submissions.

Stardust Quiz: A staple of every Stardust, the quiz consisted of prelims submitted via Google form on the 24th of July, and finals over Google meet on the 25th. It featured questions from astronomy, astrophysics, usually with a current affairs or pop culture connection.

World Space Week

Nakshatra in collaboration with Pragyan hosted World Space Week at NIT Trichy. WSW is a global annual event from 4th to 10th October, and Nakshatra conducted the following events to commemorate it.
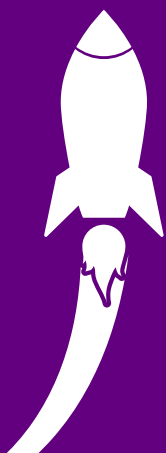
Cosmic Canvas: Cosmic Canvas is a graphic design contest, with the themes Cities on Venus, or Event Horizon of a Black Hole. Prizes worth INR 3000 were awarded to the top submissions.

Space Labyrinth: An event that involves deciphering clues on a web page to proceed to the next level, Space Labyrinth was launched on October 8th, carrying with it prizes worth INR 6000.

Space Sherlocked: This event is a series of puzzles that need to be solved to crack a mystery. Puzzles included case study type questions, audio files and more. Cash prizes worth INR 9000 were awarded to the quickest and most accurate submissions. Space Sherlocked happened on October 9th.

UFOs: Unverified and False Opinions about Space is an event conducted by Nakshatra in collaboration with Pragyan Social Responsibility on October 7th. It reaches out to high school and college students and explains common astronomy myths and misconceptions to them.

Content calendar

As part of our online activities, which include spreading awareness and raising interest in astronomy, the club creates commemorative content for scientist and astronomy events through Nakshatra's social media handles to talk about recent space and astronomy events. A few activities under that heading would include:

- Medium articles were posted about "The Potato Planet", " DART mission" on our blog, https://medium.com/nakshatra
- The Sky this Month : A short summary of astronomical events that will happen in a particular month to increase interest in stargazing among students.
- Content to commemorate the birth anniversaries of eminent astronomers and astrophysicists, as well as landmark discoveries, inventions and spaceflight.

Launch of club's official website

The club successfully launched the official website in this academic year at https://nakshatra.nitt.edu/. The website serves the purpose of showcasing all activities and initiatives by the club, both offline and online, and gives interested people a way to connect with the club.

James Webb Space Telescope launch party

The James Webb Space Telescope is the most powerful telescope ever launched. This will enable a broad range of investigations across astronomy and cosmology, such as observations of the first stars and the formation of the first galaxies and will help us understand potentially habitable exoplanets. JWST was launched on 25 December 2021 on an ESA Ariane 5 rocket from French Guiana. Club held a launch
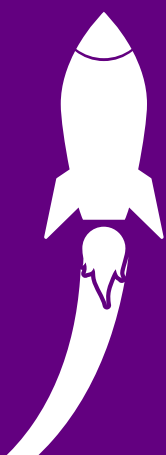
fparty where we hoped and cheered for a successful launch and had discussions related to various aspects of the telescope.

Knowledge-Sharing Session - Telescope Operation

After a hiatus of more than two years, club members were able to do stargazing, and a knowledge-sharing session was held with the help of faculties from the physics department on March 25th, 2022. Concepts covered include preparing the mount, mounting the telescope, balancing and aligning the telescope, followed by basics of manual and automated object-tracking.

PROFNITT

Term Report

PROFNITT

FOREWORD FROM THE PRESIDENT

We, the core of ProfNITT, The Finance And
Investments Club of NITT, feel honoured
to have taken up the club's helm under the
online circumstances and later offline, learning
how to lead a club and adapting to different
situations has been an enriching experience.
We have successfully inducted fresh blood into
the club and provided learning resources and
tasks to hone their skills. The new members are
now better equipped to handle projects and
enter the world of finance in earnest. We are
looking forward to a fruitful year where
students will gain valuable knowledge and
experiences.

INITIATIVES/PROJECTS TAKEN UP THIS YEAR

Group Discussions :
Conducted regular meetings and interactions with the members of the club to discuss and share knowledge in the field of finance.

Educational Instagram posts :
To make financial concepts, news, events easily understandable to the NITT community through instagram. Club members had the opportunity to learn how to publish content for the general audience.

Ruchi Soya project :
A study of the strange events that led to the rise of ruchi soya stock and to publish an article on it. The students involved in the project got to investigate and find tools for the task given which was of broad spectrum.Learned the interface of NSE data provision which was a big pillar of the project and a common thing for a lot of other initiatives in commercial/personal investments and management.

Free courses :
    Free courses were given to the members and there were interactive and doubt clearing sessions within the club. The members learnt a lot and were able to apply the concepts for their own trading and investing purposes.

Provision of paid financial instruments to club members :
    A lot of the club members actively follow the market and lack tools when they work on intense formations to which this was intended as a solution. Platforms like MoneyControl, Tickertape were purchased for the same.

EVENTS CONDUCTED AND RELATED INFO :

Trading Competition :
    A trading competition was conducted in collab with Finlatics during NIT ConclaveX, To show the participants that the skills they learn during this competition can also help them in real world trading. 2 Students from NIT - Tiruchirappalli won the competition as 1st place and Runner up and were awarded prize money as a token of appreciation.Large number of daily active traders in this virtual trading competition showed that there is a lot of untapped potential and interest in NITT students.

Investment Analysis and Economy Financial Markets post 2020 Workshops :
Reaching out to the multitude of opportunities to explore various domains of investments such as Fundamental analysis, EIC models, case studies etc. Learning about interactive stock market games, bull and bear run in markets and sectors of the future.

Guest Lecture by Mr Chirag Mahawar :
A guest lecture was conducted in collaboration with MC Connect by Mr Chirag Mahawar to educate the audience on how to pursue Finance as a career option post graduation and on how to manage personal finance and also on how to secure admission in the Top B-Schools in India.

How to trade Crypto :
Collaborated with Sigma, The Business Club of NITT, To conduct an online webinar on How to trade Crypto by Mr. Sanket Thankar, Founder of Alphabot Capital. A trading competition post the workshop was conducted and prizes worth 6k were given.

Fintriv :
A create a fun-filled question series filled with sparks of finance knowledge to test, educate and inculcate finance interest in students. A knowledge sharing session on finance was conducted by one of the members during the event.

CAMPUS DEVELOPMENT INITIATIVES

- Trading Competitions and free to join workshops (Mentioned Above)
- Educational Instagram Posts(Mentioned Above)

# COLLABORATIONS

Finlatics-ConclaveX :

Investment Analysis Workshop- On various domains of investments such as Fundamental Analysis, EIC models, Case studies, Technical Analysis,etc.

Economy and Financial Markets post 2020 Workshop- Interactive stock market games, Bull and Bear run in markets, and sectors of the future.

A sponsorship amount of Rs 5,000 was provided by Finlatics and another amount of Rs 10,000 by BharatX, out of which Rs 10,000 was given as prize money to 2 winners.
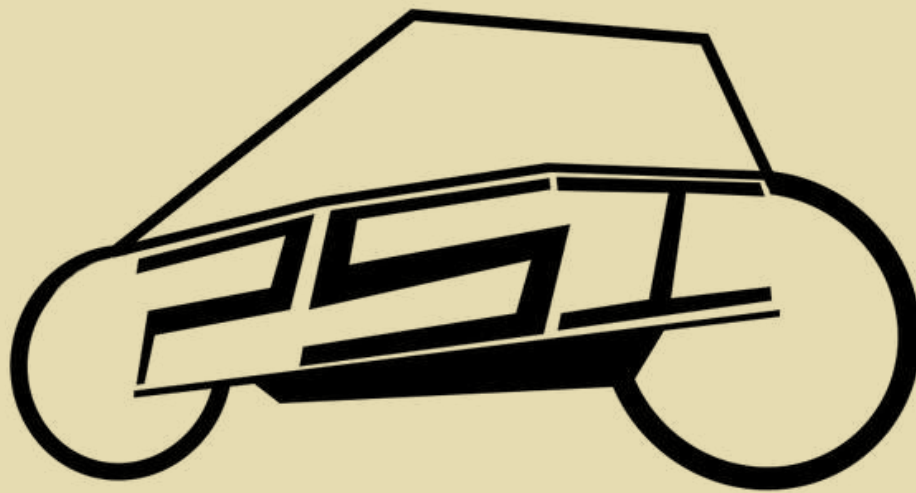
PSI RACING

Term Report

PSI RACING

WHO ARE WE?

We are a team of students spanning all four years of college education and all departments united by a shared love, "the love for automobiles." This results in a close-knit team that is as efficient as it is excellent, and we are the official motorsports team of NIT Tiruchirappalli. Our team works hands-on to tackle every challenge and hurdle that comes our way, and this helps us think and work in a way that includes the creative and individual thinking of each member of the team. This has led us to be part of the top teams in India and we are among the top 10 teams in virtual dynamics and won 3rd place in Maneuverability event, BAJA SAE INDIA 2022.

Baja SAEINDIA is an off-road vehicle competition series organized by the Society of Automotive Engineers India (SAEINDIA). Student teams from all over India compete in multiple dynamic events,
such as an endurance race, maneuverability course, sledge pull, hill climb, and acceleration event. They are also judged for their work in design, sales, cost, and marketing events held during the
annual competition

FOREWORD

The COVID-19 pandemic has affected our plans for this academic year as it was hard to work physically fabricating the ATV. But thanks to our faculty advisor Dr. Nanda Naik Kora and Dean SW Dr. Kumaresan for allowing us to work in college. A special mention to Dr. Dalley Krishnan and the Student Council and Technical Council, NIT TRICHY for smoothening our re-entry process.

With such a short time for fabrication, we faced problems like delay-in-delivery of raw materials, manufacturing defects. The help of Dr.Paneerselvam and Siemens CoE, NIT TRICHY helped us to get Brake and Acceleration Pedals machined using VMC at Siemens CoE NIT TRICHY. We would also like to thank Dr.Ramesh for providing us with 3D printed fixtures for chassis welding. We are also grateful to Dr. K R Balasubramanian for his support in Automobile Lab.

This academic year was about the training of the third and second years of the club. We successfully fabricated and tested our new 4 wd atv and provided the required hands on training to all the members. The pandemic affected year had rendered an inexperienced group but through this year we have been able to make up for lost time. I am confident that the work done in college and the results of this year would motivate the club for the years to come.
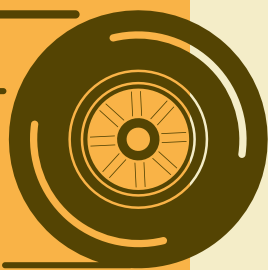
PROGRESS IN 2021-2022:

Design Phase:

For this BAJA season, we decided to go for a 4WD ATV to promote culture of innovation, improve our performance and to cope up with the rugged tracks and terrain at the event. The design innovation and computational evaluation of our ATV and the components were started during early 2021. By the end of August, we completed the design and necessary evaluations were done by us. During September, we had our Virtual Design Presentation to BAJA Committee and the suggestions told by the committee were considered and design re-iteration was done in that month. During December 2021, we had our static events, in which we were evaluated for our Design Ideology, Design Validation Plans, Design Failure Mode and Effect Analysis, Computational Analysis, Ease of manufacturability, Design Improvement.

Fabrication Phase:

A short fabrication plan was made earlier during quarantine for optimal utilization of time and resources. Our fabrication phase began in late 2021 and we started making our Roll-Cage. Throughout the fabrication we faced several new challenges in the sub-assembly and assembly of our ATV.
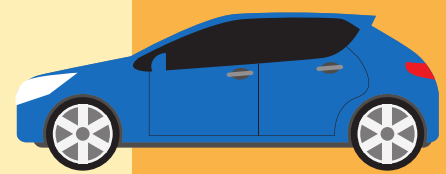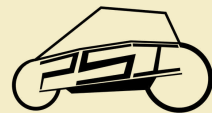
The fabrication of Roll-Cage included procurement of pipes of various dimensions, bending them for our requirements which are done by 3rd party manufacturers, profiling the same for welding them together. This was done by late December 2021. Parallelly, suspension arms were made using fixtures and laser cutting of various mounts and gussets was done.

Drawings were sent for outsourcing components such as Differential, Reduction gear box, Knuckle, Wheel Hub, engine mount and adapters. We started the procurement of the OEM components needed for our vehicle. In the Statics event of BAJA 2022, we made manufacturing and cost report which was based on methodologies and cost incurred in this phase.

With the completion of manufacturing, assembling upon receiving and testing of individual subsystem components, we entered the assembly phase of our car by February 2022. This included packaging of components in the roll cage ensuring it satisfies required clearances and abide by the rulebook.

Testing:

In the virtual dynamic event, we parametrized the car using IPG Carmaker software and maneuvered it using driver commands on different tracks during December 2021.
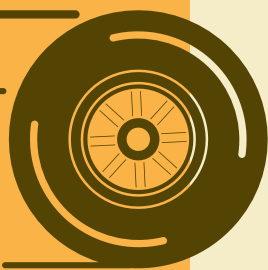
We had one week of testing in March 2022 which involved tuning the car and understanding its behavior for different shock pressure, CVT (Continuously Variable Transmission) settings etc. This allowed us to properly identify the car setting required for the various events that we participated in. For tuning the CVT, we made use of rotary encoder that helped us to find the rpm of primary and secondary pulleys. In this period, the driver started getting adapted to the car and adjustments and settings suggested by the driver were considered and implemented.

Meanwhile, we fabricated spare components in case of breakdowns in the car during event.

# ASSOCIATIONS AND SPONSORS:

- VAP Precision Engineering
- Hi-Tech Engineering
- Polyhose
- AliTradelinks
- Amul
- Velman Carvings
- Sajas Electricals
- Conducted the workshop "AutoDrift" and event "Make-A-Thon" in collaboration with TECHANALOGY.
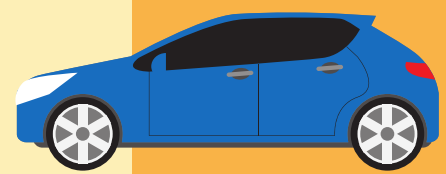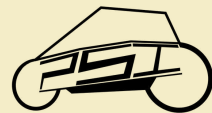
FUTURE INITIATIVES:

- Machining more parts on-campus with the help of CNC Lathe and VMC machines in Siemens CoE.
- Considering Design for Manufacturing more intensively to save costs in manufacturing.
- Designing and testing of Shifter to enable Dynamic Shifting
- Design of Custom Cage for Primary CVT.
- Bringing in more sponsors and having more people to work on publicity and marketing of the team.
- Making more rigorous testing tracks.
- Creating an Electrical R&D team, for making a battery-powered ATV, for participation in E-BAJA in upcoming years.
- Conducting workshops exclusively focused on automobile engineering.
- Explicit analysis of Roll-Cage.
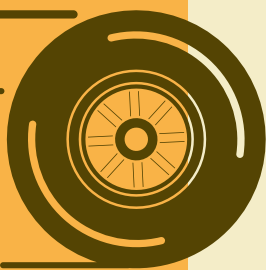
RESEACH SCHOLARS' FORUM

Term Report

RESEACH SCHOLARS' FORUM

FOREWORD FROM THE PRESIDENT:

RSF (Research Scholars Forum) is the forum functioning for the welfare of researchers since 2015 and officially formed in 2017 with the help & support of Institute functionaries. Research Scholars Forum mainly focus on organizing workshop, seminar and guest lecture regularly with experts from academic institution and R&D

INITIATIVES/ PROJECTS TAKEN UP THIS YEAR:

1. Orientation

An orientation programme was conducted for the students to introduce the facilities of SIEMENS Centre of Excellence in Manufacturing. Dr V Anandakrishnan, Associate Head of CoE given the lecture. A total of 100 students participated in the event.

2. Guest Lectures

Guest Lecture was conducted in the in Research challenges in wireless sensor networks. Dr. Amruta Vishnu Lipare from IIIT Pune. 43 students attended the event.

Another Guest Lecture was conducted in the topic of Texture ad EBSD analysis of Materials. Mr Achintya Patra from IIT Madras. Scholars with the background of Mechanical, Metallurgy and Production really got benefitted from the case study presented. Total participant count was 52.

3. Workshop

5 days workshop on Swarm and Evolutionary Intelligence for Optimization was conducted jointly by RSF and IEEE SB NIT Trichy. Following topics were elaborated in the workshop.

- Introduction to bio-inspired algorithms
- Single and multi-objective optimization problems.
- Criteria and objective functions.
- Hands-on sessions on different algorithms using MATLAB.
- Research advances in optimization techniques using bio-inspired algorithms.
- Practical research applications.
- Future research directions.

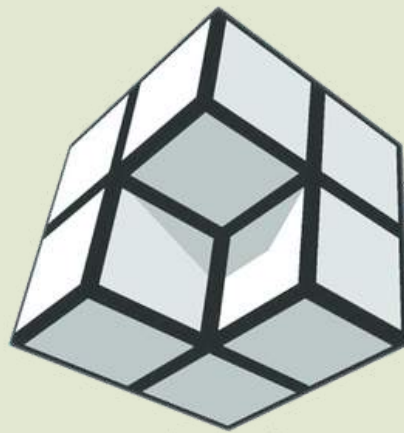32 participants attended the 5 days workshop.

UPCOMING EVENTS

Guest Lecture in

1. Research Parks and Startups Incubation
2. Occupational Stress and work life balance
3. Bio Inspired Algorithms in Engineering Design

2021 - 2022

RMI
ROBOTICS AND MACHINE INTELLIGENCE

Term Report

RMI

Robotics and Machine Intelligence

FOREWORD FROM THE PRESIDENT

We at RMI take pride in being able to innovate in various fields within robotics. As a testament to this spirit, we were able to work on multiple exciting projects this year that pushed the boundary of what was possible.

None of this would have been possible without the great minds in our club, who I am deeply proud to work with. I am also truly grateful to our faculty advisor Dr. K. Pannirselvam whose inputs were invaluable to us.

I am confident that in the upcoming years we will continue to work hard on our goal to advance the reach of robotics and make robotics more accessible to students at NIT Trichy.

INITIATIVES/PROJECTS TAKEN UP THIS YEAR:

1.Sangam Projects:

a. Project ANVI: Link

Our project aims to provide navigation assistance to individuals with visual impairment by providing instructions in audio format. The proposed solution consists of a specially designed wearable belt and a headset cum goggle. It uses state-of-the-art Machine-learning models to extract useful information from images in order to empower the visually impaired with a better life.

b. Project Aribot: Link

Traditional inspection of which is practically difficult, time-consuming, labor-intensive, and prone to errors. Cracks or defects in rail track causes track failure which leads to incidents like derailment.

Autonomous Railway Inspection Robot(ARIbot) is a four-wheeled robot that traverses rail tracks to conduct regular inspection of rail tracks, sleepers, fasteners, and ballast with an array of sensors. The primary objective of this project is to look for defects in rail tracks and the

supporting structures in a way that significantly reduces the need for manual inspection of railways. This improves the efficiency and accuracy of inspection, which will have a positive impact on the safety of railways.

c. Project LEWI: Link

Our project LEWI aims to map an unknown environment for example a terrorist-prone building, without entering inside the building by just using WiFi signals. Maps of indoor spaces can be obtained without entering inside. LEWI uses the Received Signal Strength Indicator (RSSI) of the WiFi signals to create the map. This estimated map of the indoor space helps soldiers to strategize a proper plan.

d. Project SPARO: Link

This project aims to create 3D models of objects without using any expensive equipment with complicated parts. The images of an object are taken and fed to a variant of NERF. The neural network renders the points from images into 3D space and interpolates between the same. A loss is imposed on the position of points in space and minimized, forming a 3D mesh.

e. Project SSC: Link

Project SSC is a device that can read signs and gestures of a person and convert them to simple speech.
The signs, based on finger movements and angle of the hands, are decoded to specific words using a Deep Learning model deployed on a microcontroller, which is further fed to a speaker. The product is much more mobile and on the edge. It is also very cost-effective compared to existing solutions in the market.

f. Project SSC: Link

STAR aims to prevent illegal poaching and trafficking of animals in sanctuaries. Our approach towards this

problem statement is by detecting vital signs like heartbeat and respiration rate. Moreover, range and velocity estimation can be performed using this technology. This project proposes the use of Frequency-Modulated Continous Wave (FMCW) radar to send and analyze signals to detect and estimate respiration and heartbeat frequencies. Being capable of measuring vital signs(through non-contact methods) and having a wider field, is more advantageous than the existing alternatives. Through its implementation, the detection of human activity and the vital signs of the animals in the reserves can be easily monitored.

2. E-Yantra- Agribot: Link
An autonomous ground vehicle (AGV) that can move and pluck ripe fruits from the field was designed and simulated in ROS and Gazebo. We developed ROS nodes (python) for autonomous navigation around the field, detected ripe fruit using color detection filtering, and performed pick and place of UR5 arm using Moveit.

3. E-Yantra- DairyBike: Link
We design a Dairy Bot comprising a Two Wheeled Self Balancing Robot. The robot loads/unloads dairy products from a dairy farm to designated delivery points. We use a Linear Quadratic Regulator (LQR) control strategy for balancing the robot equipped with a flywheel mechanism. After building the bot, we navigate it in an arena to complete a set of tasks.

4. Project SPS: Link
The project proposes to install low-cost camera modules in multiple parking lots across the city, which stream the live image to the corresponding remote server. The remote server processes the data from the camera module and decides on the number of vacant parking spaces available in the parking lot. The remote server updates the number of vacant parking slots and the number of filled parking slots in a cloud database. The number of vacant parking slots and their location is displayed in a web application accessible to the general public and free to use. The database is updated continuously, ensuring a pristine user experience.
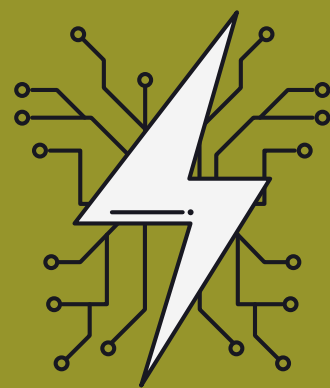
5. Project PEPPER:

Pepper is a mobile robotics framework implementing machine learning and AI techniques in multi-agent systems to map and interact with a dynamic environment. We established decentralized multi-agent coordination and implemented exploration of agents, and implemented path planning in an explored environment. Formulated a decentralized policy for multiple agents to explore the given map in an efficient manner. Created an environment in which we have a map and agents in it. We have various options to alter this environment.

6. Project OpenQuad:

The project was designed as a platform for implementing various deep learning and computer-vision algorithms such as person tracking, Gesture recognition, Optical flow stabilization, Human Pose estimation, obstacle avoidance, and depth estimation using monocular vision. The drone uses a pixhawk flight controller with RaspberryPi as a single board computer. DJI flame wheel is used for the quadcopter structure with custom mountings for safety measures. Serial communication is used to communicate between Pixhawk and RaspberryPi. RaspberryPi runs a ROS node that communicates with the ROS node running on the host PC to transfer videos over Wi-Fi. To make the project open-source, easy to develop, and reproducible, the simulation environment setup has been dockerized using docker containers. Gazebo is used for simulation.

7. Campus Development Initiative:

We present a solution where the camera feed from the CCTV cameras inside SCIENT or in SAC building is being processed using a machine learning algorithm fine-tuned to identify humans (eg YOLO algorithm) to keep track of a number of students inside the lab. After this, the students are classified based on which room they are in, for example, if the person is in 1st floor conference room, then he will be part of that zone.
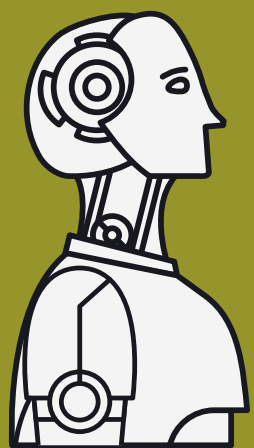
If a particular zone is empty for more than 2 minutes(time delay can be adjusted) the lights and fans in that room will be turned off. This allows saving of electricity in our campus.

8. Genesis/NITT Conclave Workshop:
Genesis is the annual workshop of Robotics and Machine Intelligence (RMI). This year, the workshop was conducted online through Microsoft Teams for free of cost to introduce 1st years to various domains of Robotics. This year we collaborated with Technical Council to organize Genesis for both first years and as a workshop for NIT Conclave. We received over a total of 200 registrations for the workshop where we taught the students how to use ROS and solve a micro mouse challenge.

Upcoming Initiatives:

1. RMI Hackathon:
 Hackathon-based competition planned for 1st years which might be clubbed along with InHotts by Pragyan which will be used for pre-inductions for next academic year.
2. SIH Teams:
 3 teams from RMI are participating in SIH as the main teams representing our college. The project work will continue for these teams preparing for SIH.

Achievements/Collaborations:

1. The following projects have won prizes in Sangam'22, Pragyan's annual hardware hackathon:
- LEWI (1st Place in Defence and Industry)
- Aribot (2nd Place in Defence and Industry)
- SSC (1st Place in Healthcare and Natural Sciences)
- ANVI (3rd Place in Healthcare and Natural Sciences)
2. 2nd place in E-Yantra 2021-22, All India Robotics competition held by IIT Bombay with over 35k competing teams. Project - Dairy Bike.
3. 16 prizes won at Invente 6.0 by SSN college of Engineering,Chennai.
4. 3rd place at IdEEaVolt 2.0 at IIT Roorkee
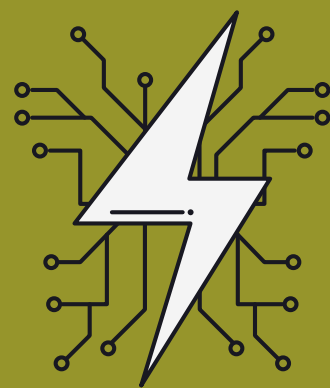
5. 1st place in Amrita Smart City Hackathon, an event with cash pool of 3 Lakhs.

6. 3rd place in Ideavation'21 by Shri Shivaji Memorial Society's Institute of Information Technology, Pune.

7. 1st place at Project Presentation at Chaitanya Bharathi Institute of Technology (CBIT), Hyderabad

8. 2nd place at Colloquium, Currents'22 NIT Trichy.

9. 1st place at Ideathon by WIN-NITT organized by NIT ConclaveX 2022.

10. 1st place at Ideathon'22 organized by Github Developers Community, IIT Madras.

11. Participated in Flipkart GRID 2.0 Challenge

12. Collaborated with Pragyan'22 events team to organize the event Simroid under the Roborex cluster. Link: Website

13. Collaborated with Robotics Society, NIT Hamirpur as their community partner for Roboweek 2.0 Link: Instagram.

14. Published 3 club projects as papers in various conferences mentioned below:

- Project Marko link
- Project SRF (accepted at ICCET-2022 and in process of publishing)
- Project HIDQ (accepted at ICCET-2022 and in process of publishing)
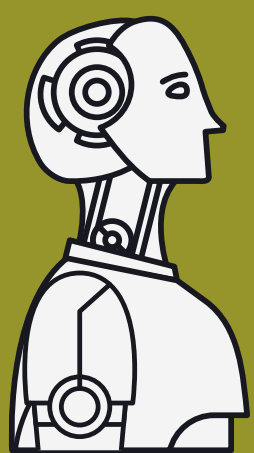
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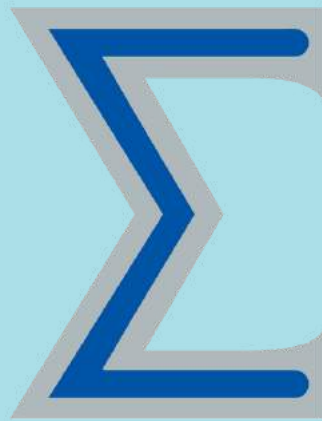
SIGMA

Term Report

SIGMA

FOREWORD

We, the core and members of SIGMA, The Business club of NITT, are driven by the desire to provide the NITT student community and our members a business oriented environment where there is an abundant flow of ideas and information about real-world business problems and scenarios.

We approach problems from various perspectives, using a wide range of techniques and skills. With the past two years being online, a major focus has been on using analytical tools for assessment of our projects and it has become an indispensable skill which our members are equipped with.

We look forward to a productive term next year where we wish to provide and share more knowledge and experience about our work.

INITIATIVES/PROJECTS TAKEN UP THIS YEAR:

1) Enigma Magazine: Published the first edition of the Sigma magazine which was created to become the most knowledgeable, in house source of information in the business realm. It contained various sub sections that deal with diverse content such as trending business articles, a guide to solve guesstimate questions, summary of an interview with Sigma's co-founder and IIM student etc. It will be the prime product of the articles domain along with its set of business articles.

2) Finance Vertical: Started a new finance vertical which aims to ensure financial literacy amongst club members by looking into financial topics in the likes of accounting and valuation of companies. Have had discussions about upcoming projects with the club members.

3) Paytm Project: Analyzed the PayTM IPO to evaluate their revenue model, competitor analysis and also reasons as to why PayTM is releasing an IPO along with why several famous investors are backing the company. After the IPO allotment and its subsequent failure we identified reasons for the same and what it could mean for the future of the company and other similarly sized IPO
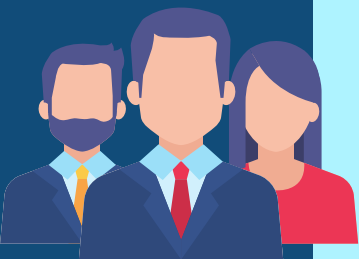
4) Shipping Crisis: We studied and analyzed the various causes, effects and alternative solutions to ease the ongoing shipping crisis and prepared a report on the same.

5) Datacamp Training: Created an analytics training bootcamp for newly inducted members by providing them Datacamp subscription through their Github Student Benefit Package. By the end, they were familiar with statistical and analytical techniques being used in most industries. They later applied those techniques for other projects.

6) MnA: Explored a dataset containing the mergers and acquisitions made over the years by tech giants including Amazon, Google, etc. We identified distinct patterns and outlined various strategies using which different tech giants strategically acquire smaller companies for various reasons.

7) Crypto: Conducted an in-depth time series and financial analysis of various cryptocurrencies with an end goal of forecasting where each of them are headed in the future. Achieved excellent results using sophisticated time series modeling algorithms and also compared and contrasted the financial characteristics of different types of coins based on their roots.

EVENTS:

How to trade Crypto:
Collaborated with ProfNITT, The Finance Club of NITT, To conduct an online webinar on How to trade Crypto by Mr. Sanket Thankar, Founder of Alphabot Capital. A trading competition post the workshop was conducted and prizes worth 6k were given.

SIGMA
The Business Club

UPCOMING INITIATIVES :

Enigma 2.0 -
Objective:
Give students an in-house source of information about management / business / finance matters.

About the initiative:
- It is the first and only in-house management / business magazine of NIT Trichy.
- It consists of various sub sections that deal with diverse, trending and thoroughly researched management / business related content condensed into a reader friendly format.
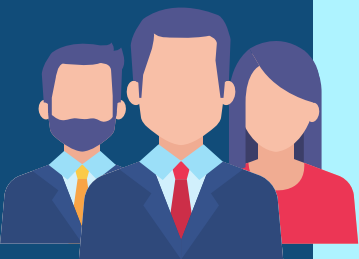
Management and Business Forum -
Objective:
Create an open environment/platform for all the students to share their thoughts and ideas on business-related topics

About the initiative:
- Students who want to write articles or take up independent projects can approach anyone in the open community for guidance and collaboration.
- SIGMA will provide a platform to publish and publicize their articles.
- Regular discussions and meets would take place to increase business and management related dialogue among the student community.

SIGMA
The Business Club

SIGMA Podcast-

Objective:

Bring in real-life industry knowledge from working professionals and experts in the field of management, business, finance and business analytics to talk.

**Session on various Finance related certifications-**

Objective:

Spread awareness about Finance certifications like CFA, FRM, etc. among students. These exams and certifications are recognized on a global scale and can be taken during UG studies.

ACHIEVEMENTS OF SIGMA IN 2021 :

Secured first runners-up position in The Ultimate Manager competition held by Pragyan where the team was put through rigorous sessions covering every facet of management, including finance, marketing, strategy, operations, systems and human resources.

2021 - 2022
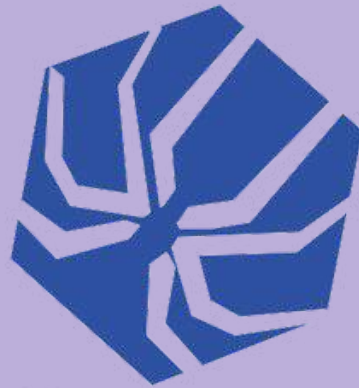
SPIDER R&D

Term Report

SPIDER

FOREWORD FROM THE PRESIDENT:

Spider, the Research and Development Club of NIT Trichy is a group of people enthusiastic about technology and innovation. We pursue industry-relevant projects in the areas of Artificial Intelligence/Machine Learning, Robotics, Embedded Systems, Computer Technology along with App and Web Development. Spread across 4 domains: Algorithms, App Dev, Tronix and Web Dev, we Ideate and Innovate to take Research and Development projects to greater heights.

Spider had an eventful academic year 2021-22, with research paper acceptances in reputed International Conferences - International Conference of Robotics and Automation (ICRA) 2022 and International Conference on Control, Automation and Robotics (ICCAR); paper acceptance in IEEE Wireless Antenna and Microwave Symposium (WAMS); successful organization of a national level hackathon (TRI-NIT Hackathon), successfully launching the Lynx-NITT App, iNITT Portal (Inventory Issuing, Tracking and Transcription), OIR Portal, amongst many other achievements.

We conducted Inductions for the B.Tech first years (2024 batch) in June-July 2021, providing them with simulation softwares for hardware related tasks, which ensured that the applicants need not go out to buy physical components.

Following inductions, the club members started brainstorming projects for this academic year. We were able to take up 23 projects in this year, and laid foundations for some of those projects to be taken forward in the next academic year. Thus, in spite of the lack of in-person interactions, Spider R&D was able to keep up with its motto of ideation and Innovation. Our club members also participated in numerous hackathons and competitions conducted by reputed organizations, including Sangam Hardware Hackathon, Smart India Hackathon, E-Yantra Robotics Competition etc. and managed to win some of them and back respectable positions in others. The details of all the new projects and activities are described in the following sections.

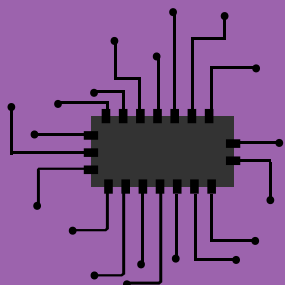# INITIATIVES/PROJECTS TAKEN UP THIS YEAR:

Detailed report of all projects for this academic year can be found in the link below:
        Spider Projects and Events 2021-22

A brief description of all projects is provided below.

TRONIX PROJECTS:

1) Project Crowd-Tracker (Smart India Hackathon 22 , DRDO Dare to Dream 3.0 , RECAL Healthathon 2022):

A cloud based architecture involving a network of smart surveillance cameras capable of real time human and facial recognition in all visibility conditions without the need for additional hardware such as IR cameras to track the movement of people and detect intruders across large geographic areas using the concept of Multi-Access Edge Computing.
Image 1 and Image 2- Authorize a new person with their picture and details
Image 3 - Real time intruder detection alert with option to view live feed of cameras
Image 4 - Facial Recognition in excessive darkness

2) Learning Discriminative Embedding for Effective Covid Prediction from Chest X Ray Images:

Chest X-rays are one of the simpler ways to detect the Covid-19 virus against the standard methods like CT scans and RT-PCR diagnosis. Inspired by recent research that demonstrates the effectiveness of using Chest X-rays for COVID-19 diagnosis, We Developed a Novel Supervised Architecture based on Ensemble Model and Mixture of Expert Framework to Predict COVID-19 Infection from Chest X-Ray by learning Discriminative Embeddings By leveraging Both Identification loss and Verification Losses. A Cycle GAN model is used to generate synthetic dataset to Augment the Dataset to solve Data Imbalance.
The Results shows that our proposed CNN classifier architecture model ensures unbiased and high accurate predictions outperforming existing State of the Art Deep learning models for Coronavirus detection from Chest X-ray images, showing strong performance and proves to be easily deployable and scalable, which therefore increases efficiency of the process of analyzing Chest X-ray images in the detection of coronavirus.
Image 5 , Image 6, Image 7
To be converted to a research paper and aimed to be published at upcoming top international conferences.