

Term Report

2020-21

Clubs'
Annual
Report

Communities'
Initiatives

Councils'
Initiative
and Events



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STUDENTS' COUNCIL

FOREWORD

The year 2020-2021 was a colossal challenge for the student council, with the adaptation of an entirely new mode of education - online classes. The physical and mental health of students along with their academia was one of the major responsibility that were addressed.

Due to the very limited number of students on campus, there were immense opportunities for developing infrastructure in the college.

Though students weren't able to be present physically, many initiatives were taken to ensure a smooth flow for conducting the online classes.

Amidst the pandemic, we were able to give our best to the student community addressing various concerns that were put forth by them. Though it was a bit arduous tread, It was an impeccable journey for our team with an excellent learning curve overall.

- Students' Council '20-'21



DIGITAL INITIATIVES

Document request portal

Portal to easily request documents like Bonafide, Transcript, NOC was created. This portal also had the option for course deregistration and registration application.

Instructions

GENERAL INSTRUCTIONS

- 1. Bonafide**
 - Download the document from [here](#).
 - Scan and upload** the complete bonafide document.
 - Signatories**: HOD → Associate Dean(adsw@nitt.edu).
- 2. Bonafide (with Residence Proof)**
 - Download the document from [here](#).
 - Scan and upload** the complete bonafide document.
 - Signatories**: Warden → HOD → Associate Dean(adsw@nitt.edu).
- 3. Transcript/ Rank Card/ Grade Card**
 - Upload the fee receipt after payment.
 - Refer [here](#) for payment information.
 - Signatories**: transcript@nitt.edu (No need to specify).
 - Choose a mode of delivery of document.
- 4. Course Re-Registration/De-Registration**
 - Upload the Course Registration form as obtained from MIS.
 - Signatories**: Faculty → HOD → ugacad@nitt.edu → ugsection@nitt.edu.

RELEVANT LINKS:

- Get the webmails of wardens [here](#)
- Get the webmails of faculties [here](#)
- Get the webmails of HODs [here](#)

Scholarship Portal

The portal was designed to display the scholarships offered by NIT-T and to aggregate all application at one location.

This also helped to easily verify the applications and provide financial assistance to those in need.



SOCIAL WELFARE INITIATIVES

Aid Fund

For Students affected by the floods in Telangana and by other unexpected problems, funds were passed and immediately given to the students' families.

Fee redemption exemption

Exemptions were given to B.Tech 2nd and 3rd-year students to submit their income certificate to claim the reduced fees.

Bringing back students to college

Students who faced network difficulties and who were not facing suitable circumstances in their home to focus on academics were called back to campus and safely quarantined and allowed back to campus.

Fee reduction

Fees deemed unnecessary during an online semester were reduced.

ACADEMIC INITIATIVES

Academic Breaks

To give students a break from the mental stress they were facing. Academic breaks were given to students to replenish themselves.



MISCELLANEOUS INITIATIVES

Techno-gym

A techno gym with centralized AC and new equipments was installed near the sports centre with funding from MHRD.

Grammarly Extension

The free subscription of Grammarly for NITT students was extended

Guest Lecture by Soumya D Gupta on "Career planning" (19/09/2020)

Talk on the topic (Education Tomorrow) on National education day(11/11/2020)

Fencing hostel zone area

The hostel zone area was fenced to prevent cows from entering the hostel zone and also to keep the zone secure.

Official recognition of the LGBTQ+ community

Institute day 2020

Establishment of Hope NIT-T (along with Social Council)

TECHNICAL COUNCIL



May to September

Coursera for NITT, a grow-from-home initiative was brought about by the Technical Council to help students during the pandemic. Through the initiative, Coursera offered over **3,800 certified courses** from top global universities.

More than **5000 students** were benefited from this initiative.

Courses offered under this initiative were:

1. Data science
2. Computer science
3. Business
4. Technology
5. Health care
6. IT and cloud computing
7. Arts and humanities
8. Physical science
9. Professional development
10. Engineering





To improve the **open-source culture** on our campus, NIT Trichy has recently been recognized as a **GitHub Campus Program Partner**. This enables access to a package of premium technical tools for departments and students alike.

Among other perks, pre-final year B.Tech and MCA students can now enrol for the **GitHub Externship**, a fellowship program that includes *mentorship, stipend*, and more.



Projects,
Exams,
Associated
Resources,
Links &
Scholarships

In our quest to broaden minds and impart wisdom, Technical Council *in association with Pragyan* presented **PEARLS** - an initiative to serve as an ultimate guide on various internship opportunities, research, and development projects, scholarship merit to look out for, examinations for all students.

<https://www.pragyan.org/pearls/>

Welcome to PEARLS!

In our quest to broaden minds and impart wisdom, NIT Trichy's student run techno-managerial fest brings to you, Projects, Exams, Associated Resources, Links and Scholarships - an Initiative to serve as your ultimate guide on various Internship opportunities, research and development projects, scholarship merits to look out for, examinations and much more. We at Pragyan, believe that knowledge is the greatest treasure one can possess and it can only double when shared. We sincerely hope, that this initiative would bear much fruit and you would benefit the most out of it.

Login

Mock Interviews

To help students with Internships and placements, the Technical Council presented an opportunity to be a part of the Mock Interview series conducted by Industry Professionals.

There were **5 mock interviews** held with 10 students participating, crushing their fear of an interview out in the open.

The collage consists of five posters arranged in a grid-like fashion:

- Top Left:** "MOCK INTERVIEW" poster for Sayak Dutta, Data Scientist at Amazon. Scheduled for Saturday, 5:00 PM. Includes the Dataquest logo.
- Top Middle:** "MOCK INTERVIEW" poster for Rajdeep Paul, Senior Engineer at Qualcomm. Scheduled for Saturday, 5:00 PM.
- Top Right:** "MOCK INTERVIEW SERIES" poster for Interview-01 transcript, featuring Dr. Vikas Verma, Executive Director, Head HR Strategy, United Overseas Bank.
- Bottom Left:** "MOCK INTERVIEW SERIES" poster for Interview-02 transcript, featuring Mr. Anantha Natarajan, Software Engineer, Facebook.
- Bottom Right:** "MOCK INTERVIEW SERIES" poster for Interview-03 transcript, featuring Mr. Akshay Vidwans, Product Marketing Manager, Schneider Electric.



InHOTT

The **Inter Hostel Technical Tournament** is an event conducted exclusively for the **First-years** to help them showcase their technical talents in various fields.

This year a plethora of events were conducted over a span of 10 days including **workshops, activities** and **competitions**.

The events got massive participation of **500+ first years** and provided an amazing opportunity for all of them.

The events were conducted by the various Tech Clubs and the Technical Council.



AND



PRESENT



INHOTT

INHOUSE EDITION

COMPETE FROM HOME

EVENTS || WORKSHOPS || COMMUNITY SESSIONS || ACTIVITIES

EXCLUSIVELY FOR FIRST YEARS

REGISTRATION LINK: [PRAGYAN.ORG/INHOTT/](https://pragyan.org/inhott/)

PRIZES WORTH 25K

JAN 22ND TO FEB 1ST

ACTIVITIES

Community session by **cryptoNITT, DSC** and **Womxn in Tech**

Various communities have been formed in the past year which any student can become a part of. The aim of this session was to give the 1st year students an idea about all of the communities present and the work that they do.

Tech Clubs' briefing session

Clubs form an integral part of a student's life at campus and this session helped the 1st years understand what each of the clubs do and what work they carry out.

EVENTS

Code Golf by **Delta**

Fundamental by **Technical Council**

Spider Circuit Simulation Contest

RMI Hybrid Hackathon

180DC's In CASE You Didn't Know

WORKSHOPS

Case Closed:

An Introduction to Management Consulting by **Sigma**

X-Ray Astronomy 101 by **Nakshatra**

Techathlon Workshop by **DC and PSI**



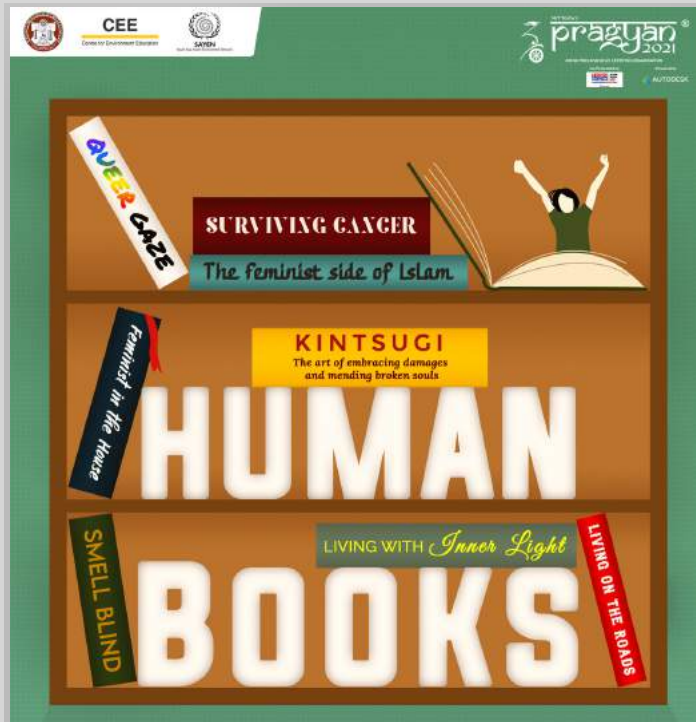
Tech-Clubs Awareness



Technical Council and Orientation'20 held "**Tech Clubs Panel Discussion**", a session aimed at giving freshers the opportunity to directly interact with representatives of tech clubs in NIT Trichy.

La Casa de la Tecnología, an initiative of the Technical Council, is a series of talks with the **Tech Clubs of NIT-T** to help the students better understand the Tech Clubs in terms of their **projects, vision, journey**, and the **future ahead** for them. These talks will aim to generate excitement among the viewers about the Tech Clubs and **enhance the Tech Culture** in our college.

Human Books



The list of Human Books included:

- *Feminist in the house*
- *Kintsugi - the art of embracing damages and mending broken souls*
- *The feminist side of Islam*
- *Smell blind*
- *Surviving Cancer*
- *Living with Inner light*
- *Living on the Roads*
- *Queer Gaze*

The human books series was started as a way to provide students with starkly **different perspectives** to their own and give a platform for people to share their own journeys and stories.

This has always been a very intimate series to help create an atmosphere in which people can interact freely and without any caution. The human books initiative was hosted online during Pragyan'21 as a closed doors session.



The Technical Council organized a **Data Science Hackathon** as a part of the Grow from Home series. Irrespective of their proficiency in Data Science, all enthusiasts competed to take away prizes worth 15k.

DataCrunch was completely **beginner-friendly** and participants were also given preparatory materials to speed up their process of learning Data Science. The event was hosted on Kaggle, which is the world's largest and most active data science community.



COMMUNITIES

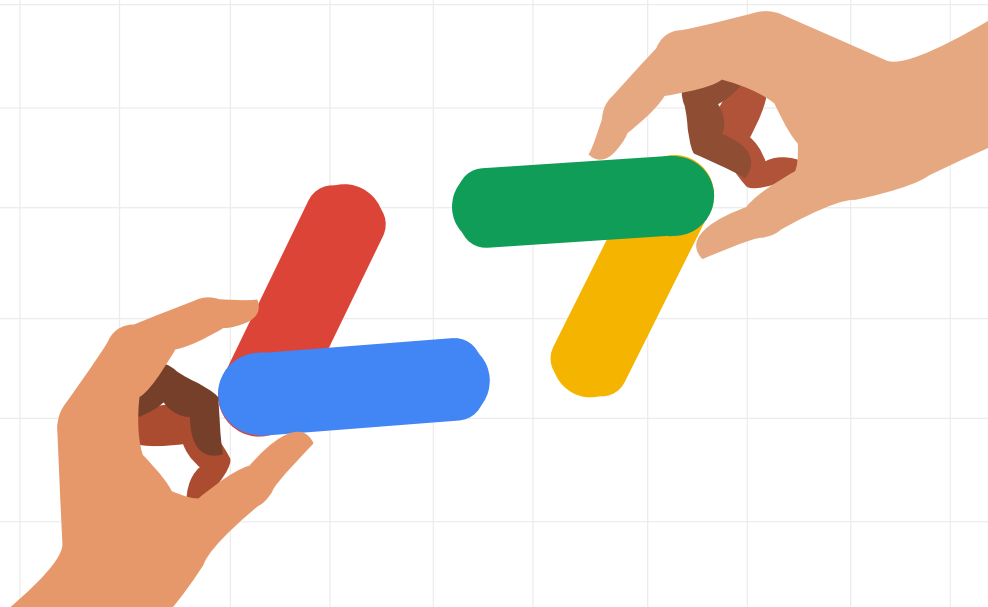
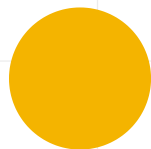
REPORT



Google's Developer Student Clubs are **community groups** for colleges whose members strive to improve themselves as developers. Supported by Google who provides a **wide range of events** that can be conducted and help the students come together to form a thriving community.

Throughout the past year, DSC has conducted multiple events with the aim to improve the knowledge of students and to help them realize their interests.

With a community with well over **600 members**, NIT-T's DSC community has achieved incredible things and has kept the students engaged even during trying times.





EVENTS



30 Days of Google Cloud was an event conducted to introduce students to the Google Cloud Platform through interactive and hands-on training sessions using Qwiklabs.



To help students who wanted to get into the wonderful world of developing Android applications but didn't know where to start, the **Android Study Jam** was introduced. This event spanned over the months of *December 2020 and January 2021*. The event included multiple sessions with a DSC facilitator who guided participants through their journey of building for android. Participants could complete online courses and receive badges and learn to create their own apps along the way.



Solution Challenge

 Google Developer Student Clubs
National Institute of Technology Tiruchirappalli

With the aim of solving one or more of the United Nations' 17 sustainable development goals, the **Solutions Challenge** event was kicked off on *20th January 2021*.



WOMXN IN TECH COMMUNITY

This community hopes to help anyone identifying as a **woman** and interested in the **STEM** (Science, Technology, Engineering, and Mathematics) fields by fostering equity and enabling them to get to places they aspire and deserve. They aim to create an atmosphere where girls can **explore tech, help each other, and climb the technical ladder together.**

The community kickstarted the initiative with the **Alumni Spotlight series** where we had several alumni talking about their own experiences and inspiring fellow womxn to fight through the issues they face together while also climbing the tech ladder.

More **AMA sessions** are also planned to clarify questions related to opportunities such as scholarships and competitions, and regular scrums to get to know what everyone's working on, to learn from each other. Meanwhile, more **alumni** are providing their valuable experience to the table and mentoring those womxn in the community who desire mentorship in specific areas.



TRI - TRONIX:

This was the educational aspect towards the involvement of women in the field of Robotics which was done in a 3 step process comprising

1. Intronix- Introduction to Robotics.
2. Alumini Talks- Inspirational Robotics Journey with Akshaya Srinivasan.
3. Let's Explore- Hands-on session, which allowed students to gain knowledge as well as earn a badge for completing the course in Robotics.

Series of Panel discussion:

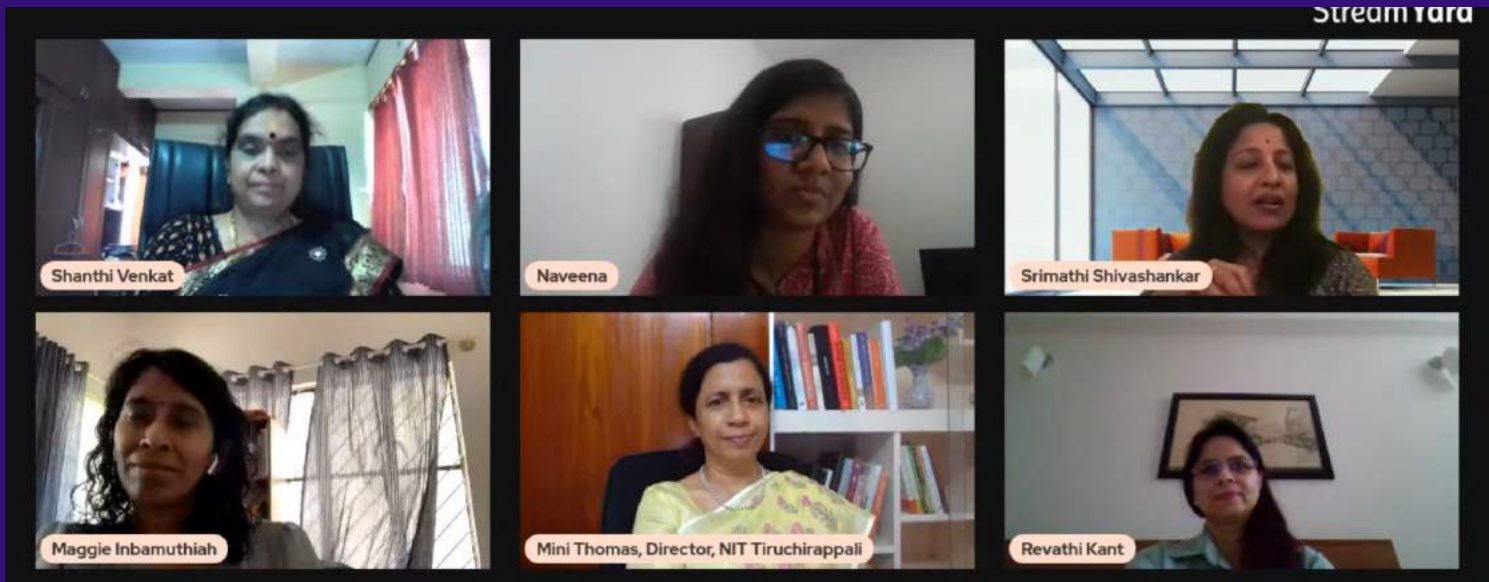
23rd December 2020

This panel discussion consisted of various women personalities such as Renu N Gupta (*Head of Design, L&T Ltd., Heavy Engineering*), Krithika Venkatesan (*Solutions lead L&T - NxT*), Saloni Dublay Gupta (*Solutions Lead IIOT, L&T Technology Services Ltd.*) which focused on talking about various issues faced by the women who newly come into the industry and how to manage their workload as well as give them experience and hardship faced by these strong women to reach to their positions.



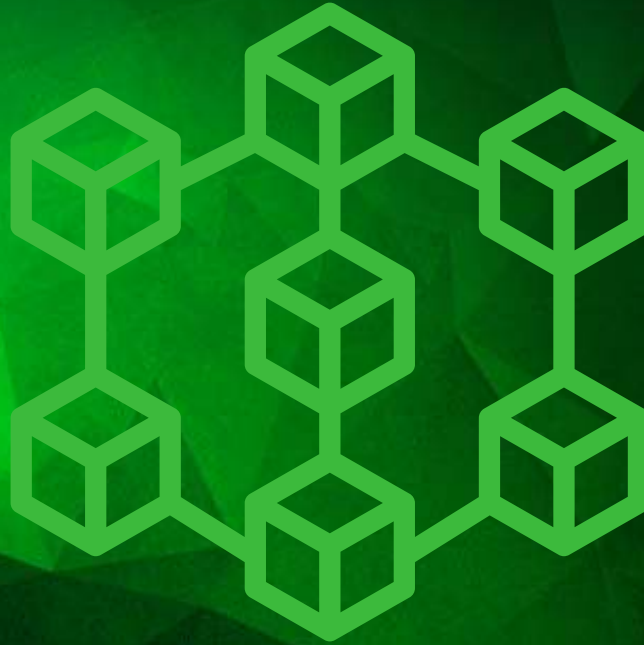
The Womxn In Tech Community, in association with the Paper Dolphin, organized an event on *March 13th* celebrating *International Women's Day* and the official launch of the **Women's Inclusivity Network of NITT**, or WIN-NITT.

The community's main aim is to inspire and enable women to achieve their career **inspirations** through **networking** and **support** from **NIT Trichy alumni** by establishing a **supportive peer group** where students are able to empower each other.



The Chief Guests for the event were distinguished Alumni members of NITT including **Dr Mini Shaji Thomas** (*Director of NIT-T*), **Srimathi Shivashankar** (*Corporate Vice President, HCL Tech*), **Revathi Kant** (*Chief Design Officer, Titan Company Limited*), **Shanti Venkatraman** (*Director - Delivery Excellence, Cognizant*) and **Maggie Inbamuthaiah** (*Founder Happifeet, CEO Puppetica Media*).

The event was conducted online, including talks from the guests concerning inclusivity, women in technology and business, which was followed by various online interactive events.



The Technical Council also established an **open-for-all community** focussed on educating and upskilling developers on **Blockchain** technology.

The community aims to provide the necessary support for upcoming DApp developers to gain the required knowledge, skills, and experience to explore Blockchain's vast potential.

The community has also set up a Discord server, giving knowledgeable updates, resources and news regarding Blockchain technology in the world.

Celo A.M.A Session

27th December 2020,

11:30 AM

YouTube Live



Having onboard with us, **Celo** **cLabs** and **yBlockchain** to help provide necessary resources for upcoming DApp developers, an AMA session was held for the enthusiasts.

Tezos DApp Codealong

4th February 2021

6:30 PM

Google Meet

A closed-door session was held for beginners in the blockchain. The session was held with **Mr Madhav Aggarwal**, *Tezos facilitator and Fellowship '20 recipient*, to help the enthusiasts begin their journey of Blockchain tech.




TECH CLUBS' REPORT

Foreword from the Core of '20-'21

“Coming together is a beginning, staying together is progress, and working together is success”. This one-line quote by Henry Ford summarizes the story of 180DC NITT 2020-21.

After two years since the club’s inception, the Academic Year 2020-21 has been the best year so far in terms of achievements, projects completed, and impact created.



All of us have seen COVID-19 rock the entire world, a pandemic that is still ongoing. As the entire nation went into lockdown, several start-ups and NGOs were struggling to cope with the tsunami of changes that followed. This gave an opportunity to the student consultants at 180DC to truly live by our motto:

“Creative Ideas. Practical Action. Lasting Change”. Out of the 10 projects we worked on this year (with start-ups and NGOs from various sectors), we as a club feel grateful that we were able to provide solutions to 3 pan-Indian NGOs, thus directly impacting the social space in India during these tough times.

Case competitions were something new that we tried out this year, as the team wanted to test out their skills against consulting enthusiasts across the nation. Having secured podiums at four national-level case competitions and reaching the finals of two more, we feel this year has been a great starting point for the team to go out and explore more such opportunities looking forward.

We are also happy to have established a good brand presence on campus, and it is excellent to see consulting enthusiasts popping up all over NIT Trichy. This year has given us a head-start in improving the consulting culture on campus, and we are excited to see all the new opportunities that might spring up for the whole institute in the days to come.

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.

Finally, we wish to appreciate the efforts taken by every single member of our team in helping us lay a solid foundation for the club this year. We are excited to see what the future holds in store for the club. As we always say, Onwards and Upwards!



INITIATIVES

Cuddles Foundation:

Cuddles Foundation is the only NGO in India providing holistic nutritional support to underprivileged kids fighting cancer. The 180DC team worked closely with the organization to create a risk management framework. With the help of the framework, the 180DC team was able to perform risk analysis for the entire organization and came up with 44 potential risks and their preventive measures & mitigation strategies.

Metvy:

Metvy is a Delhi-based start-up developing a hyperlocal networking app. The team helped them with identifying their target customers and also in formulating a Go-to-Market Strategy.

CRY Foundation:

CRY - Child Rights and You is an NGO that works towards restoring fundamental rights and upliftment of underprivileged Indian children. We at 180DC worked with the organization for the following: Strategize an alumni event for CRY to bring together all their volunteers and interns (past/present). Create a Virtual Volunteering/Internship Program Strategy for CRY to implement in both Offline and Online Mode.

ConnectMeUp:

ConnectMeUp is an employee engagement firm founded by IIT-B alumni. The team worked on developing a client acquisition strategy and content strategy for them.

Masters Mentor:

Masters Mentor is an Ed-tech venture that helps students upskill themselves in the latest management and analytics technology. They also help with profile building for applying to top B-schools. We helped them devise a pricing model for their digital marketing course, helped them run Social Media and Email Marketing campaigns. We also optimized the client's website and the enrollment process providing better brand reach and better awareness.

Nalandaway Foundation:

Nalandaway Foundation uses visual and performing arts to help children from disadvantaged communities in India. The problem statement was to develop a growth mindset amongst pre-adolescents aged 10-13 in Child Care Institutions in India. We at 180DC helped design a program based on habit formation as a primary means of intervention.

Tread:

Tread is a SaaS-based platform for fitness trainers to give workouts remotely to their customers. 180DC helped Tread with achieving Product-Market Fit and also developed a Go-To-Market Strategy.

Management Masters:

Management Masters is an admissions consulting firm that focuses on coaching MBA aspirants to get into their desired B-Schools. 180DC helped them with a strategy to sell their Strategy Ebooks to MBA aspirants.

CAAPID Simplified:

A dental admissions consulting firm based out of the US. 180DC helped them with strategies to scale their YouTube Channel. We also developed an analytics tool to help predict the chances of admission for a candidate applying to dentistry programs in the USA and Canada.

EVENTS

InHoTT - Case Study

InHoTT is the flagship event of 180DC NIT Trichy in collaboration with Pragyan and the Technical Council. The event is intended to introduce case solving and 180DC NITT as a club. Conducted in January 2021, the major highlights of the event are:

- Active Participation of 120+ 1st year students (Batch of '24)
 - 20+ Mentors from 180DC NITT to assist the freshers
- Continuous 4 hours of case solving session along with PPT preparation.

Management 101 from a Startup Founder

An interactive session by Nitish Mathur, CEO, 3Cans - A Growth Marketing Company. He is also the bestselling author of the book - Growth Hacking. This session was conducted on 4th April 2021.

Highlights of the session are:

- 1.80+ Registrations for the session.
- 2.Focus on the various management concepts applied in a startup.
- 3.Open to Internship opportunities for the Students of NIT Trichy and a brief overview of the experience.

COMPETITIONS

- Winners of CAFTA EY Case Championship 2020
- Winners of Sparsh Case Competition at IIM-B Vista
- National Finalists, HSBC India Business Case Competition
- National Finalists Solve! Global Challenge 2020 by CaseSolvers
- Top 10 in India for PM Live case competition conducted By Redbricks summit, IIM-A
- Top 150 in ZS Campus Beats Competition
- 3rd Place in Yukti, IIM Trichy Case Competition
- 1st and 2nd Place at Sangam Case Competition, NIT Trichy's Pragyan

COLLABORATION

CaseSolvers:

Case Solvers is a consulting training and talent delivery organization based out of Hungary.

We partnered with them to help publicize their flagship international case competition - "Solve!" - in the Indian student community.

Partnership with the

Consulting Clubs of:

- IIM Bangalore
- IIM Lucknow
- IIM Kozhikode

The consulting clubs of these B-Schools will help the members of 180DC in Case preparations, which is a fundamental part of any consulting interview.

CAMPUS DEVELOPMENT

Green Impact Fund:

Assisted in developing a pitch deck detailing the launch of the green council under the student council. The objective being - taking steps towards making the NITT campus carbon neutral.

Coursefair:

We at 180DC assisted the Students' Council in scheduling the course timetable for the academic sessions this year.

Institute Reopening Plan:

We at 180DC assisted the Students' Council in developing a presentation for NIT Trichy's Admin regarding plans for reopening the institute. We also helped with primary research regarding students' needs to return to campus.



THE 3RD DIMENSION
AEROMODELLING CLUB OF NIT

3D AEROMODELLING

Foreword from the Core of '20-'21

The last academic year had brought a lot of challenges because of the virtual mode throughout the year. The club has a major inclination to fabricating planes and performing test flights, but all that was not possible.

Also, some of the premier competitions like the SAE Aero Design Challenge and Boeing Aeromodelling Competition did not take place. Online communication made it even more difficult. But all these difficulties helped us adapt and evolve to overcome these problems.

The members had devoted more time to simulation related work compared to before. Fewer competitions meant everyone had more time, which was utilized in learning new software and courses and also exploring new domains. All in all, it gave a different perspective to everyone on what more can be done when we go back to campus.



PROJECTS

- Flying IoT Project
- Visual Odometry
- VTOL (to be continued next academic year as well)
- Sangam projects :
 - Balloon Drone
 - Akula
 - VKAT
 - Stationary Glider

COMPETITIONS

SAE Aerodominator - 10th & 15th place

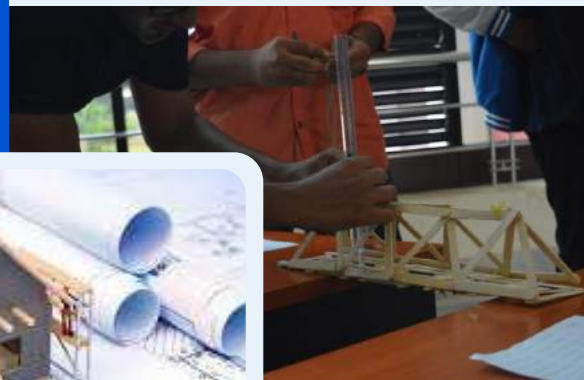
Skyrush - 4th (overall), 2nd (Design Report)

IEEE VTS UAS Communication Challenge -
One among top 10 finalists across the country



BUILDERS' HIVE

Foreword from the Core of '20-'21



The club tried to keep its work going on despite its difficulties due to the covid-19 outbreak. The groundwork has been laid to move the club forward even with no civil-related activities being done worldwide. We would love to have more enthusiasm and awareness in an era where construction is being revolutionized.

INITIATIVES

Foldable tent:

A regular-sized tent can be folded into a backpack that is self powered by the means of a solar panel.

Self Healing Concrete:

A special type of concrete that would naturally heal without any manpower.

Life Raft:

A raft, typically inflatable, for use in an emergency at sea. A more efficient design of the life raft was made and designed using ANSYS software.

EVENTS

Construct La Casa is a Virtual Construction simulation meant to test the participant's basic knowledge in the field of Civil Engineering. The event was conducted in 2 rounds. The participants who successfully complete round 1 was qualified for round 2.

INQUIZITIVE is a first year exclusive online event where students were made to solve civil engineering-related quizzes and problems and use it to discover a plan for a model house and then plot it. The closest related house plans were arranged in order and the winners were chosen. Over 35 students registered and participated in the event.

COMPETITIONS

There were no competitions conducted this year but the club has participated and won accolades in the symposiums and fests of SRM, SSN, SASTRA, NIT Calicut and IIT Kharagpur in the previous years. The club has also performed well in SANGAM. We act as a stepping stone into the competitive forums.

CAMPUS DEVELOPMENT

The club has planned and is implementing the zero waste campus in 2018, which is an initiative to make the campus carbon neutral in the near future.



DELTA FORCE

Foreword from the Core of '20-'21

It delights me to give this Foreword for Delta Force. Delta Force is a close-knit community of computer enthusiasts who enjoy coding and developing impactful software.

Despite the COVID-19 pandemic, the inductions were organized methodically and proved valuable for the freshers who applied.

The thirst for exploring niche technologies and work on groundbreaking projects spanning domains like Development, Machine Learning, Blockchain seemed on an ever-increasing trend throughout. It was unfortunate, however, that due to the heavy academic load on freshers, we could not impact them even further.

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

Kavalan Arann App

There are 2 versions of this bilingual app:

Kavalan Arann

Kaval Arann is a citizen-centric mobile application for the people of Tiruchirappalli. This app provides features that include tracking the public's requests about lost vehicles and phones, reporting locked houses to the police, integrating all CCTNS and existing services at one place, and immediate contact information.

Kavalan Arann Police

This app is the police version of Kaval Arann. It is developed for the police of Tiruchirappalli. It provides features to the police like attendance scheduling and management, locked house management, and collection of public reports apart from tracking the public's requests about lost vehicles and phones, integrating all CCTNS and existing services at one place, and immediate contact information.

RECAL UAE Chapter App

Delta Force and Spider created a web portal, an android application, and an iOS application to manage events conducted by the alumni network based in UAE and keep track of the various members of the community.

Festember, Pragyan and Aaveg Web Operations

Regular tech articles to keep NITT readers up to date with current trends in technology

A total of 7 blog posts were published on a variety of topics.

Attendance Portal

A portal built for Faculties to manage the attendance records of the students in their classes.

Currently on hold.

Maintenance of NITT Website

Maintenance of Academic Department Pages.

General bug fixes in Website server regarding storage issues

Delta Winter of Code: An Open Source initiative

DWoC is a winter-long program with an aim to support and improve the open-source culture of our college.

It served as a platform for young student developers (or even starters) to hone their technical skills by taking up projects of their interests.

The 2020 edition received applications from 375 participants, out of which 33 students were selected for the program, 18 from NIT Trichy, and 15 from outside.

Scholarship portal

Portal intended to keep students up to date with available scholarships and provide an accessible method of registering for them while also allowing the admin to approve or reject applications.

It was used successfully to manage applications for the Student Aid Fund and the RECAL scholarships.

Students portal

Portal intended to unify the different campus portals in our college.

Consisted of several portals, including Announcements, Complaints, Surveys, Campus Information, Calendar, and more.

Currently on hold.

Arrears Portal

Portal to register for arrears in theory and lab courses for B.Tech, M.Tech and PhD Students.

It was successfully used and data from the same was sent to the admin.

Regular tech articles to keep NITT readers up to date with current trends in technology

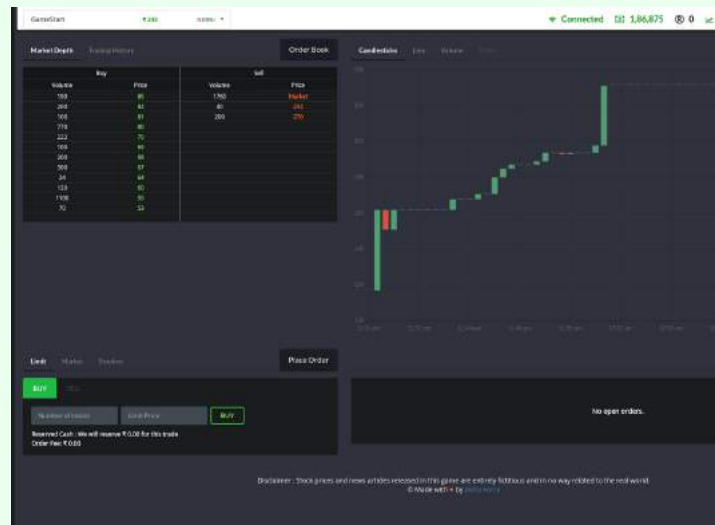
A total of 7 blog posts were published on a variety of topics.

EVENTS

Dalal Street (in association with Pragyan)

A virtual stock exchange simulator where one aims to maximize their profit by trading fictional securities.

The event had 385 registrations and the prize pool was Rs. 20,000



Delta Scavenger Hunt

Ice breaker event where participants engaged in a battle of wits to solve the brain teasers presented to them.

Pragyan Premier League (in association with Pragyan)

Pragyan Premier League is an online fantasy cricket league that lets players manage their own team, from buying squads to deciding the line-ups.

The event had 525 registrations and the prize pool was Rs. 18,000



Inferno (in association with Festember)

Inferno is a month-long series of puzzles aligned with the theme of the fest with a new mini-event unveiling each week.

Code Golf (in association with Technical Council)

Code Golf is a competitive coding challenge with a twist - the shorter your code, the more points.

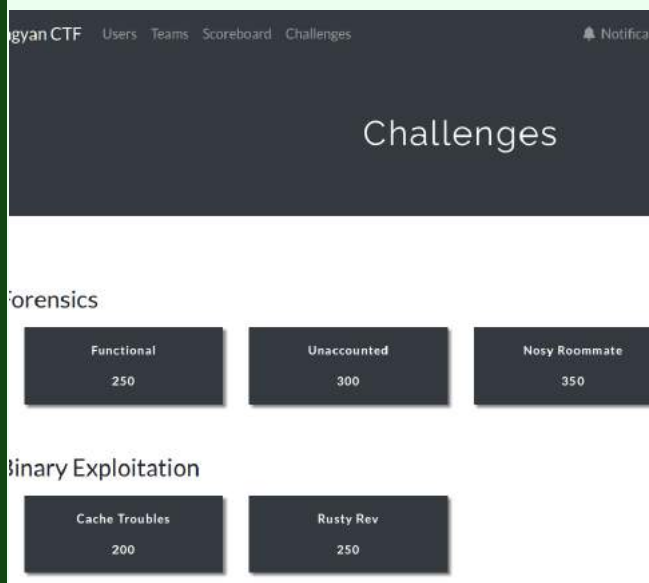
Space Labyrinth (in association with Pragyan)

Space Labyrinth is an online treasure hunt event that tests one's technical and analytical skills in astronomy to commemorate World Space Week.

Labyrinth (in association with Pragyan)

Labyrinth is an online treasure hunt event that tests your technical and analytical skills. This event will require immense general knowledge, prowess over the art of decoding clues and a lot of common sense, coupled with a faithful internet connection.

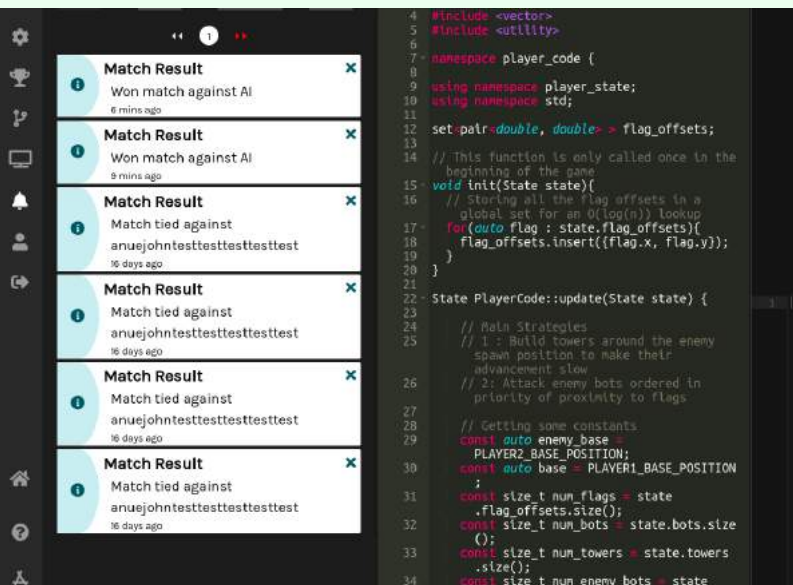
The event had 446 registrations and the prize pool was Rs. 20,000.



Capture the Flag (in association with Pragyan)

Capture the Flag (CTF) is a computer security competition. It distills major disciplines of professional computer security work into short, objectively measurable exercises.

The event had 989 registrations and the prize pool was Rs. 20,000.



Codecharacter (in association with Pragyan)

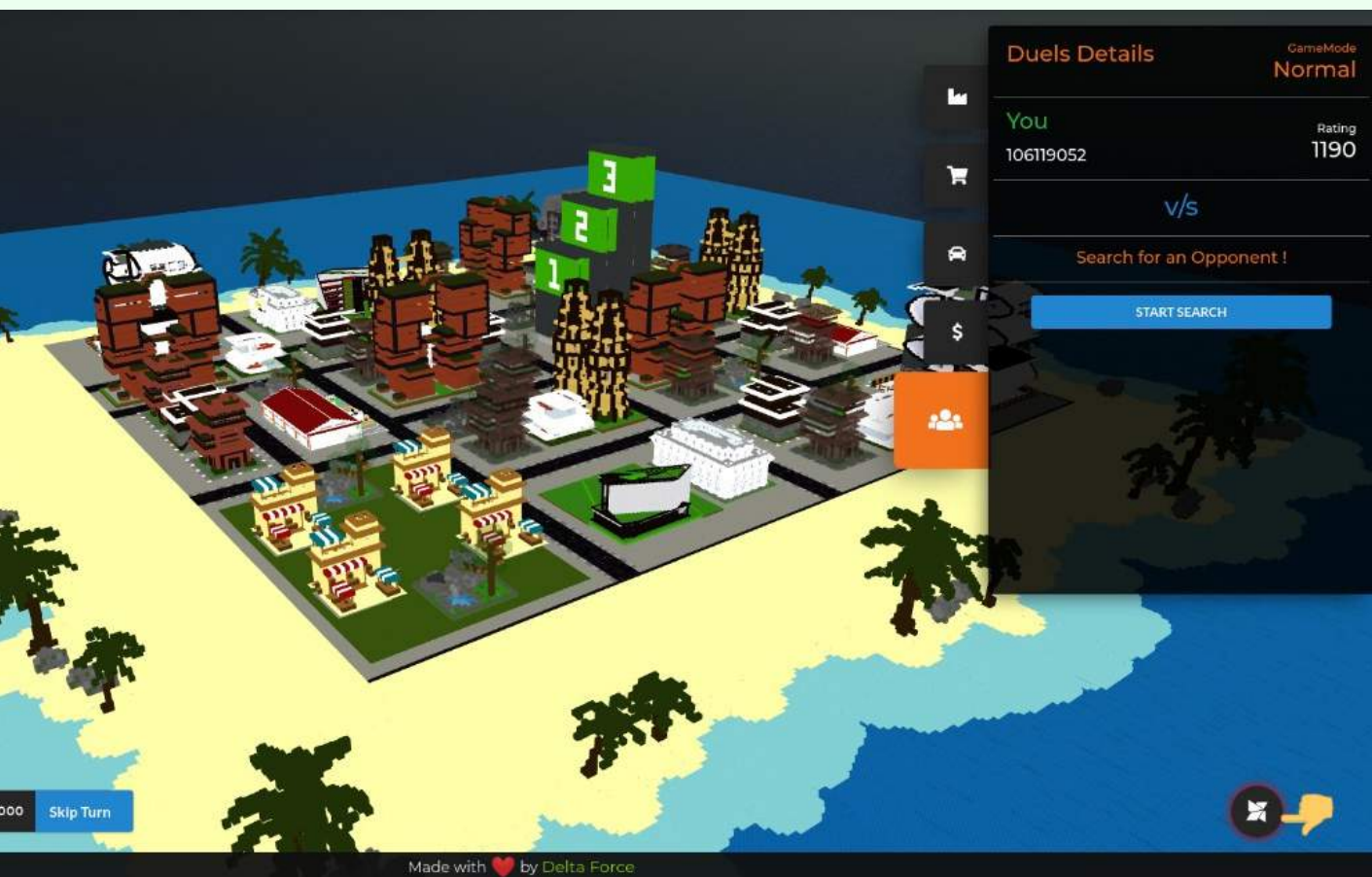
Code Character is an online AI programming match, where one writes C++ code to control troops in a real-time strategy game.

The event had 92 registrations and the prize pool was Rs. 15,000.

Beer Factory (in association with Pragyan)

Beer Factory is an online strategy-based, single-player game designed to test resource management's art. Participants manage the production and management processes in a factory and attempt to maximize the factory's profit to gain popularity. Each participant competes against a computer-simulated opponent.

The event had 436 registrations and the prize pool was Rs. 18,000.



COMPETITIONS

Smart India Hackathon - Winner

Smart India Hackathon is a nationwide initiative to provide students a platform to solve some of the pressing problems we face in our daily lives and thus inculcate a culture of product innovation and a mindset of problem-solving.

3 teams from Delta made it to the finals, out of which 1 team won out of 5 million+ students from engineering colleges all over the country.

ASEAN India Hackathon - Winner

The ASEAN-INDIA Hackathon is an initiative by the Hon'ble Prime Minister of India, Mr. Narendra Modi, involving participants from 10 ASEAN countries (Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei, Laos, Myanmar, Cambodia, and Vietnam) and India

A member of Delta emerged as the winner in this prestigious hackathon.

HackVerse 2.0, NITK - Track Winner

A 24-hour nationwide hackathon was conducted by the National Institute of Technology Karnataka, Surathkal (NITK).

A member of Delta emerged as the winner of the track "Let's Connect" in this hackathon.

Google Summer of Code

3 members of Delta were selected to work with phenomenal open-source organizations for a 2-month duration where at the end of the internship programme, they received a handsome stipend of \$1500

HultPrize Startup Ideation - 2nd Place

The Hult Prize is an annual, year-long competition that crowd-sources ideas from university level students after challenging them to solve a pressing social issue

Delta members emerged 2nd at the institute level with their startup idea: Kwik Kurries.

Shaastra Programming Contest - 3rd Place

This was the annual competitive programming contest conducted by Shaastra, the annual techno-managerial fest of IIT Madras

e-yaantra, IIT Bombay - Novel Project

e-Yantra, IIT-Bombay, a platform that has touched thousands of lives over 10+ years through robotics training and lab setup initiatives launched a hackathon to harness young innovators to help devise a response to the challenges of COVID-19.

Pragyan Hackathon '21 - Winner, Runner Up and Best Tech Stack

Pragyan Hackathon is the annual hackathon conducted by Pragyan, the annual international techno-managerial organisation of NITT.

GirlScript Summer of Code

2 members of Delta were selected to work with open source organizations for a 2-month duration. GirlScript Summer of Code stands out in that it takes a diversity centric approach towards improving open source culture.

McAfee ATR CTF - A reputed security contest - Global Top 20

This was a Capture the Flag contest conducted by McAfee's Advanced Threat Research team spanning categories such as Reverse Engineering, Exploitation, Web, Crypto, Mobile and Hardware.

HeroCTF - Global Top 10

HeroCTF is an international online cybersecurity competition for beginners and intermediates that takes place twice a year.

Esolang Contest, Shaastra '21 - Winner

Shaastra is the annual techno-managerial fest of IIT Madras Esolang Contest was a battle of solving programming problems using esoteric languages, a set of lesser-known languages.

Hack This Fall - QuikNode Track Winner

Google HashCode '21

Hash Code is a team programming competition organized by Google for students and professionals around the world, which is conducted in various stages. Participants work on real-world engineering problems.

Safer India Hackathon '21

This hackathon was launched by the Indian Road Safety Campaign and Ministry of Road Transport and Highways during National Road Safety Month to invite unique innovations that have the potential to change the scenario of road safety in India.

Shaastra CTF - 6th Place

This was the annual Capture the Flag contest targeting cybersecurity enthusiasts conducted by Shaastra, the annual techno-managerial fest of IIT Madras

Shaastra Atlassian Hackathon - Finalist

This was a hackathon themed "Work From Anywhere" conducted by Shaastra, the annual techno-managerial fest of IIT Madras. Ideas to build various systems/applications that could help manage different aspects of remote working/schooling/college were invited.

InOut Hackathon

Site Developer, Tech Fest, IIT Bombay

Devfolio Etherpunk '21 - Superfluid and 1inch bounty

EtherPunk is a global online Ethereum hackathon, where participants collaborate with industry experts and companies to innovate and build decentralized applications with the potential of mass adoption.

Android Developers Dev Challenge

4-week challenge conducted by Google, aimed at helping developers learn about Jetpack Compose, Android's modern toolkit for building native UI, which had 3 members taking part.

MLH Hackathon

Hackon2.0- Best GraphQL project

HackOn is a global digital hackathon focused on fostering innovation while raising awareness on mental health and encouraging diversity and inclusion.

Uber hackTag

Programming contest and hackathon conducted by Uber

2021 Solution Challenge

The 2021 Solution Challenge mission was conducted by Google and the problem statement was to solve for one or more of the United Nations 17 Sustainable Development Goals using Google technology.

CAMPUS DEVELOPMENT

- RECAL UAE Chapter App
- Festember, Pragyan and Aaveg Web Operations
- Delta Winter of Code: *An Open Source initiative*
- Maintenance of NITT Website
- Attendance Portal
- Scholarship portal
- Students portal
- Arrears Portal

COLLABORATION

- RECAL UAE Chapter App
- Kavalan Arann App

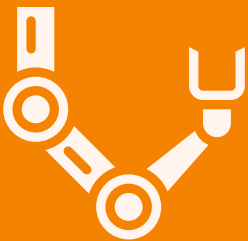
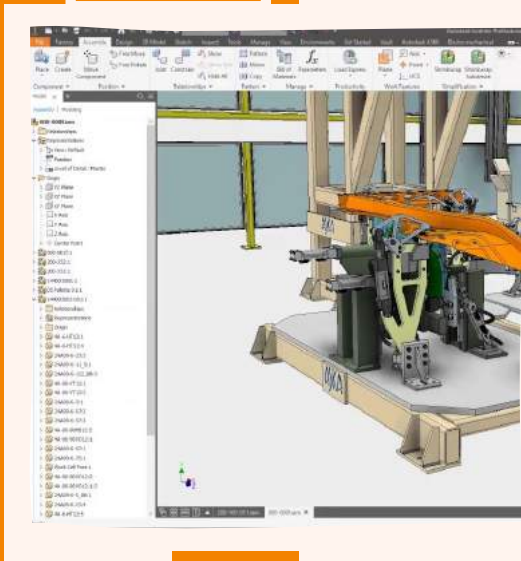
Foreword from the Core of '20-'21

The academic year 2020-21 has been uncertain and extraordinary. Getting accustomed to the virtual mode of work had its own technical hiccups, so the transition of the mode of work was a bit difficult.



Nevertheless, the remote work didn't stop us in DC from doing what we do, as most of the work we do is possible done remotely with meetings over video conferences. This year in DC, we have worked on 14 projects, took part in 7 product design competitions and hackathons, participated in 2 Conferences and published 4 Papers, worked on 4 projects in response to Covid 19,

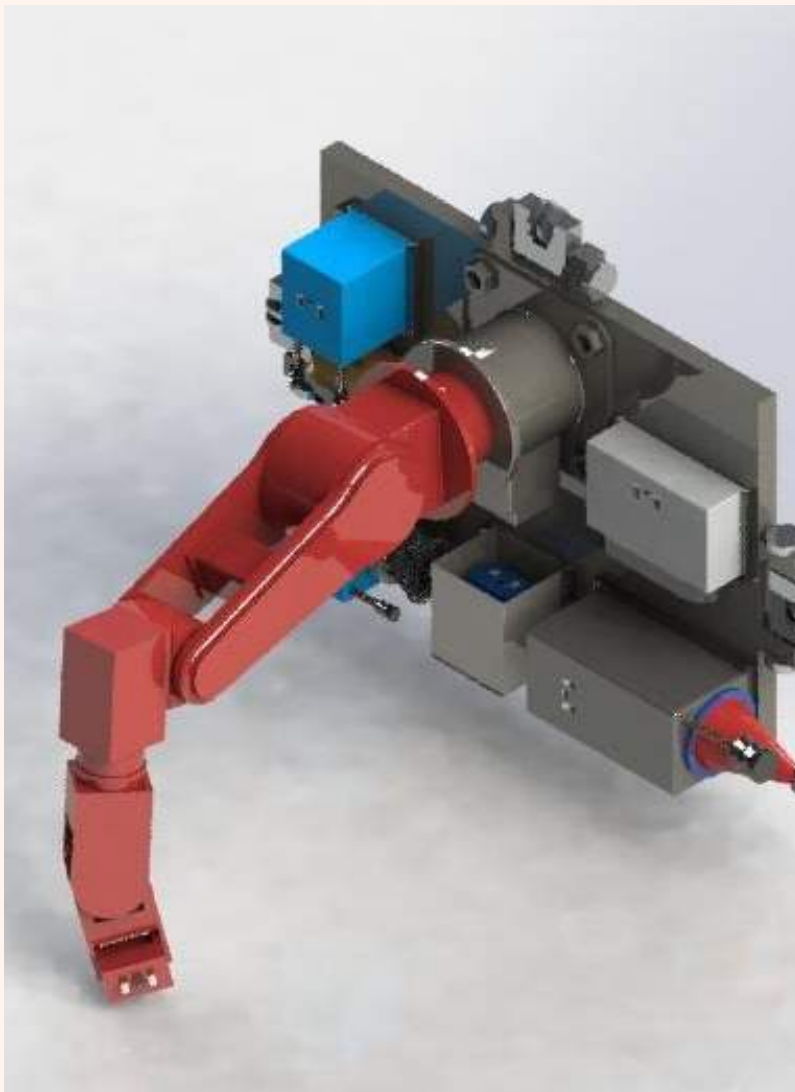
conducted a workshop and a product design hackathon exclusively for first years, did design consultancy for an alumnus, mentored 2 teams in Young Techie 2.0, formed DC Freshers' Forum to help first-years equip themselves with technical resources in the lockdown.



INITIATIVES

Turbo-T

Turbo-T aims to provide an effective way to remove biofouling of various underwater surfaces and construction like bridge piers, ship hulls, dam surfaces. The product will result in less human interference in such dangerous and less efficient aquatic cleaning activities, hence decreasing the cost, increasing safety and efficiency.



Windcare

Currently, the windmill's performance is affected by many factors such as dust accumulation on the wind blade, cracks on the edges and surface of the wind blade and lightning strikes. Windcare is a semi-automated, cost effective product that will scan the blade, clean the surface and repair minor damages.

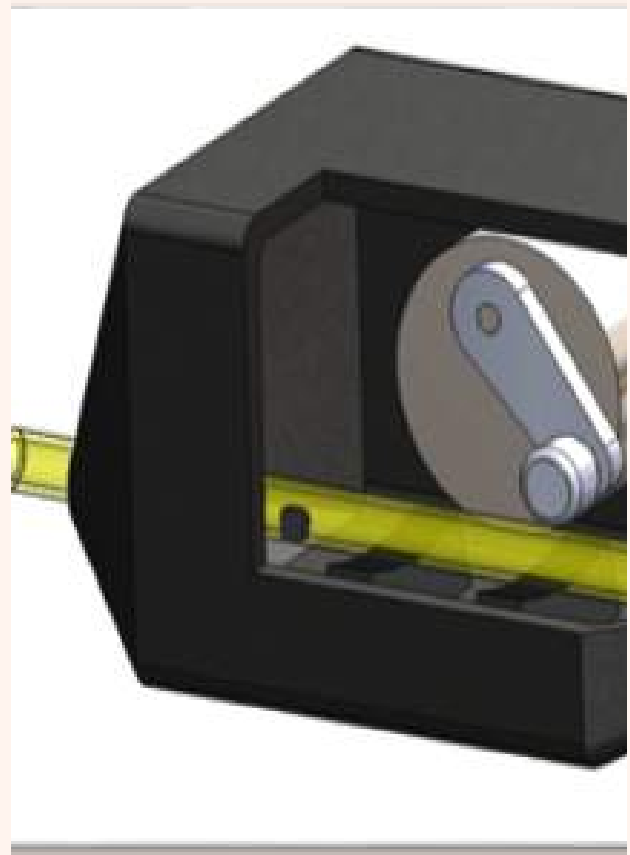


Stair-Trek

Weakening of the muscles and bones is a common problem with ageing. People over the age of 50 are prone to disorders such as arthritis and the weakening of their backbone, making it difficult for them to walk or climb stairs. The proposed solution is a stair-climbing grocery carrier that can be easily loaded in and out of the trunk of a vehicle, and an individual can own this product.

AutoCath

People with spinal cord injuries, especially paraplegics and quadriplegics often suffer from such urinary incontinence and bladder management problems. This product is an inexpensive and automated catheterization device to help decrease the occurrence of Urinary Tract Infections (UTIs), and minimize human intervention during bladder release.



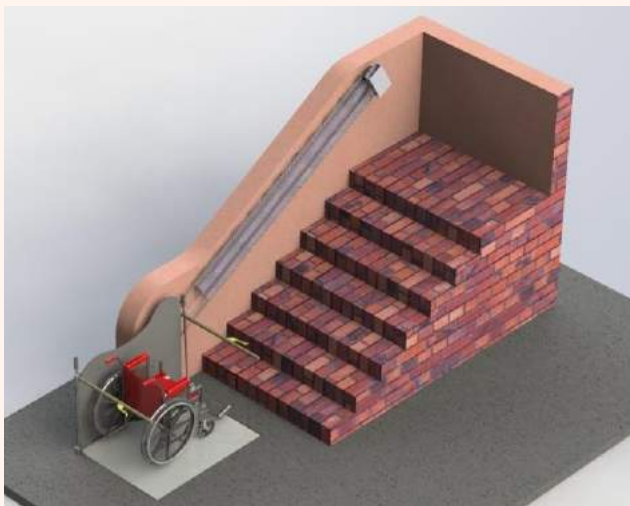


Statio

A simple, low-cost yet effective product that makes it easier for wheelchair users to lock their wheelchair in place whenever they feel the need to perform functional activities. The user can lock the wheelchair in place with just the push of a button.

EARamend

EARamend attempts to be every deaf person's safety companion, alerting users of impending sources of danger, steering them to safety. It is a simple and customizable waist belt capable of alerting the user of any incoming risks with the unique combination of a LiDAR system and a trigger word detection model.



Retro Ramp

The product addresses the hindrance faced by wheelchair occupants of a wide range of age and considering their physical disabilities, we have less effort interface which helps them to climb the staircase.

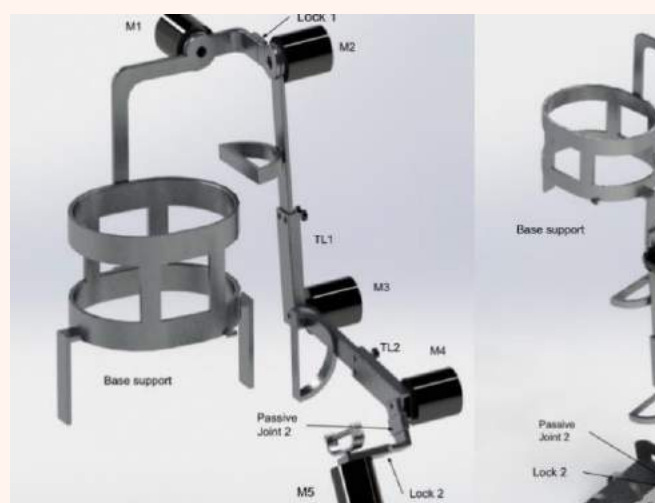


Wall-E

WALL-E (Wheelchair Assistive Light Labour - Exercise) is a simple, low cost and highly adaptable exercise equipment which allows wheelchair users to have a proper workout regimen from the comfort of their homes.

Upper and Lower limb interchangeable Exoskeleton-Robot for post-stroke rehabilitation

Hemiplegia is a medical condition in which half-side of the body gets paralyzed. Rehabilitation, using physiotherapy, is the most effective treatment for hemiplegia. This research aims to develop an exoskeleton that can be used to generate motion in the limbs to assist physiotherapy, thereby facilitating rehabilitation.



The exoskeleton is designed such that it can be used for both upper limbs and lower limbs, interchangeably.



EVENTS

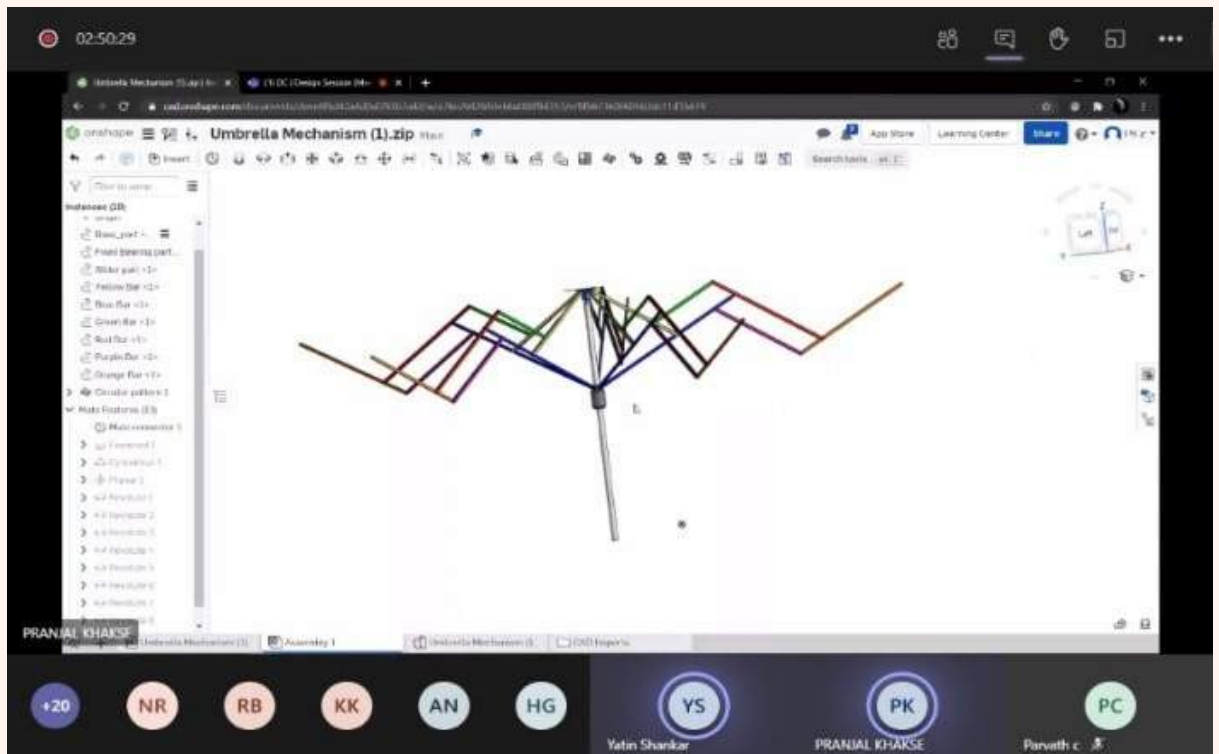
DC Freshers' Forum

We created a forum on Facebook, for the freshers to equip themselves with resources such as Solidworks, Arduino, Mechanics of Machines, etc., to make their lockdown period more productive. The DC Freshers' Forum in Facebook was created on 12th April 2020 and was live till 30th May 2020. This platform was aimed to help Freshers sharpen their technical skills in domains ranging from mechanics to electrical and electronics to material science to control and actuation. We released study material, tutorial videos for different software and exercises periodically. Apart from this we shared posts about many innovative products which have the potential to revolutionize this world. Around 190 members were actively part of the forum.

Techathlon 2021

As part of INHOTTSS - In-House edition of Pragyan'21, organised jointly by team Pragyan and the Technical Council of NIT Trichy, DC along with PSI Racing club conducted the annual technical workshop - Techathlon'21, the product designing and automobile workshop between 30th Jan and 1st Feb 2021. The workshop was conducted for free exclusively for the First years in MS Teams. The workshop involved 4 sessions:

- Mechanisms and Product design theory session by DC on 30th Jan
- Automobile subsystems theory session by PSI on 31st Jan
- CAD modelling session by DC on 31st Jan
- Data acquisition and FEA session by PSI 1st Feb



Contrive 2021

We conducted the annual product design hackathon - Contrive'21 between 7th Apr and 11th Apr 2021. The hackathon was conducted for free exclusively for the First years in MS Teams. Around 85 teams participated in this Hackathon wherein the participants were given 3 problem statements and were asked to come up with a product solution for any one of them, that has the potential to solve the problem, within 72 hours of disclosure of the same.

Through this event, the First years brought many innovative and feasible solutions for a few impending problems. Through the mentoring of the DC members, they were able to clear their doubts along the way and got their initial exposure to CAD modelling, Product Analysis (material used, strength) and circuitual connections and simulations. A cash prize worth 5K was given to the three winning teams.

COMPETITIONS

InnovIndia Hackathon 2020 - Young Indians Organization

InnovIndia Hackathon was a 24-hour virtual hackathon conducted by the Young Indians Organization on 31st July 2020, to encourage innovation to curb the COVID-19 pandemic situation. 4 teams from DC took part in the hackathon and we bagged 2 places one for Best Presentation and one for Best Team.

Designathon - Gravitas'20 (VIT, Vellore)

The Design-a-thon is a technical event that was conducted virtually by ADI-VIT club. It is a 24-hour design challenge to get creative solutions for modern world problems. The event was conducted from 2nd to 3rd October 2020. 5 teams from DC took part in the event and one team bagged Second place.

Online Design Challenge - Aaruush'20 (SRMIST, Chennai)

Online Design Challenge was a virtual CAD modelling competition conducted by SRMIST, Chennai as part of their technical fest - Aaruush'20 between 16th June 2020 to 5th July 2020. Under the Online design challenge, there were 5 different challenges. 3 teams from DC took part in the challenge.

Covideate - Techfest'20 (IIT Bombay)

Covideate is an event organized at Techfest, IIT Bombay to prevent the COVID-19 pandemic that is spreading rampantly and leaving thousands dead in its wake. The problem statement given was to develop a model that can be put in place to control the spread of the pandemic in Mumbai. One team from DC took part in the event.

Agri India Hackathon - Govt. of India

Agri India Hackathon is the largest virtual gathering to accelerate innovations in agriculture. The Agri India Hackathon was organized by Pusa Krishi, ICAR - Indian Agricultural Research Institute (IARI), Indian Council of Agricultural Research (ICAR) & Department of Agriculture, Cooperation & Farmers' Welfare, Ministry of Agriculture & Farmers' Welfare. 3 teams from DC took part in the event.

Fusion Hack - Pragyan'21

Fusion Hack was a virtual CAD Modelling event organized at Pragyan, the technical fest of NIT Trichy. One team from DC took part in the Hackathon.

AT Makeathon - Shaastra'21 (IIT Madras)

Assistive Technology Hackathon (AT Makeathon) was conducted by the R2D2 lab of IIT Madras as part of Shaastra, the technical fest of IIT Madras on 25th Feb 2021. Five teams participated in the hackathon from DC and one team bagged the third place.

Sangam - Pragyan'21

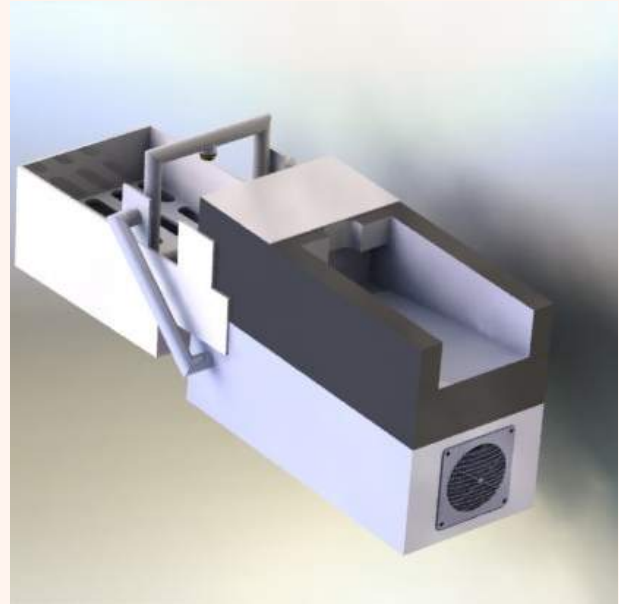
Sangam is the intra college technical competition. It is the Hardware Hackathon of Pragyan. Three teams took part in Sangam and two teams bagged First place in the domains of Healthcare and Energy.



CAMPUS DEVELOPMENT

C-Cube (Cash Cleaning Counter)

Cash is a potential carrier for the pathogen, which could stay on for 6-10 hours. The solution, C-Cube, sanitizes the cash quickly to facilitate faster cash exchange. Aqueous Ozone is used as a sanitizer because of its high effectiveness, less time, absence of harmful residue, and little to no damage to cash.

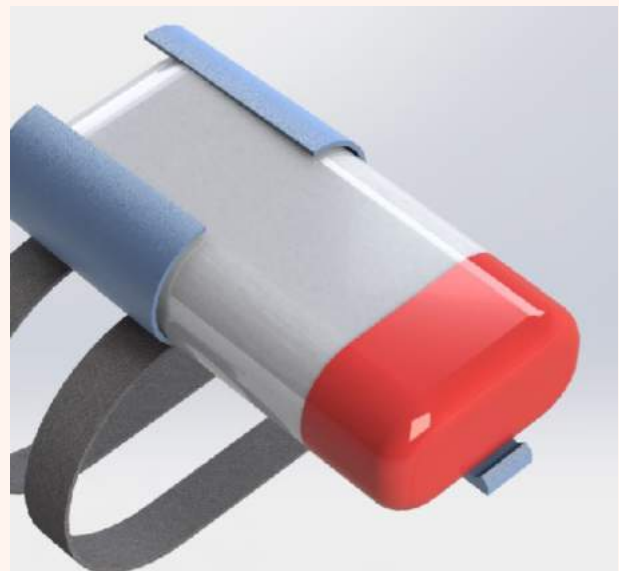


Everyday Utility Cleaner - Ozone Technology

EUC-OT involves the use of ozonized water to effectively sanitize the surfaces of all products needed for the household needs. The product is envisioned for use in main market junctions involved in retail distribution ensuring sanitized goods delivered to the consumer.

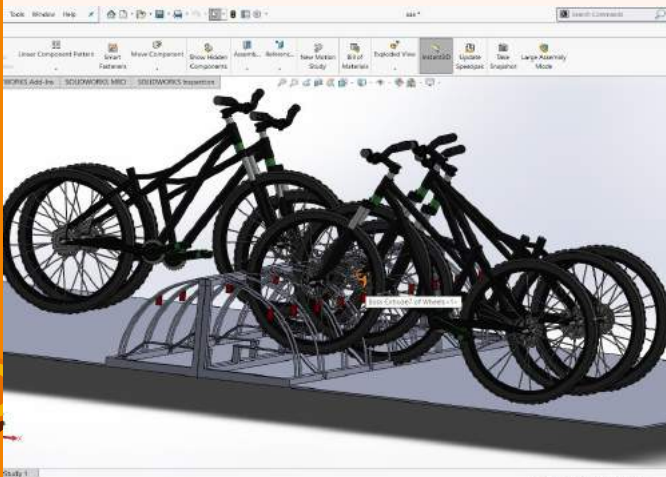
Arm-held Sanitiser

The Armheld Sanitizer is a very simple but potentially very effective snap-fit wearable solution to not only keep a sanitiser nearby at all times but also to psychologically encourage the person wearing it to disinfect their hands regularly.



ATM Cleaner

Public ATMs are subject to frequent use by many different users and can potentially be hotspots for surface transmission of viruses. The ATM Cleaner is an automated device that can be installed on ATMs. After every use of the ATM, the device, which allows contact with the keypad only via a sheet in between, sprays disinfectant and circulates the sheet to a clean area for the next user.



RFID Cycle stand

We have proposed an idea of using RFID cards for parking and safely locking the cycles to a stand which will ensure optimised use of the parking area as well.

Pedal operated water dispenser

We have also proposed the idea of using a pedal operated retrofitting device to use the water dispensers in the hostel and academic zones of the campus.

PAPER PUBLICATIONS & PATENTS

RoAI 2020: International conference on robotics and artificial intelligence 2020
RoAI 2020 conference was conducted virtually by IIT Madras between 28-29 December 2020. Four papers were presented from DC and all four papers were accepted and published in Journal of Physics: Conference Series, Volume 1831, 2020.

S. No.	Authors	Paper Title	Citation
1	Seetharam Krishnapuram Adithya Kameswara Rao K M Dhivakar Mayank Kapur	Robotic arm for automatic brake testing and control	Seetharam Krishnapuram <i>et al</i> 2021 <i>J. Phys.: Conf. Ser.</i> 1831 012021
2	K Harikrishna K M Dhivakar L N Puthiyavan Navneeth Rajiv S Premkumar T A Girithar	Benchmark device to mitigate jaw tremor using gyroscopic effect	K Harikrishna <i>et al</i> 2021 <i>J. Phys.: Conf. Ser.</i> 1831 012022
3	S Premkumar T A Girithar P Niranjana Kumar R Saimothish Vaibhav Ashok Malani Rubin Jacob	5-Position 4-Actuator automated bed to prevent bed sores	S Premkumar <i>et al</i> 2021 <i>J. Phys.: Conf. Ser.</i> 1831 012024
4	Vishaal Kanna Sivakumar Vishnu Mani Hema Seetharam Krishnapuram Shubhodeep Saha Ajay Bharadwaj Rohit Surya Kumar Raja Ramanan Sundara Raman	An automated retrofittable street light solar panel cleaner	Vishaal Kanna Sivakumar <i>et al</i> 2021 <i>J. Phys.: Conf. Ser.</i> 1831 012023

The proceedings are indexed in Scopus, as well as EI Compendex, Inspec and Conference Proceedings Citation Index CPC-I, a Web of Science Core Collection database.

S. No.	Authors	Paper Title	Citation
1	Premkumar S Yash Prakash Burhanuddin Shirose K M Dhivakar Mayank Kapur Puthiyavan L N Ssmrithi Arul	T-Ceres – An automated machine for each T-shirt to bag conversion	Yet to be published
2	Adithya Kameswara Rao Karthi S K Vedhanarayan A Ssmrithi Niranjan Kumar P Kevin Mathew Thomas Mayank Kapur	Self-Sustainable toilet system	Yet to be published
3	Adithya Kameswara Rao Sudarsana Jayandan J Harikrishna K Jayendran R Niranjan Kumar P	Novel water-conserving faucet attachment	Yet to be published
4	Karthi S Yash Prakash Kunal Yadav Amritha Suresh Nithin K Subash Siddharth Mahesh	Saarathi	Yet to be published
5	Kulkarni Atharva Kumar Deepshika S M Kevin Thomas Kunal Yadav Navneeth Rajiv Rohit Surya K Vedhanarayan K	Novel Design of selective action knee assistive device	Yet to be published

IPDIMS 2020: 2nd Innovative Product Design and Intelligent Manufacturing System: National Conference

IPDIMS 2020 Conference was conducted by National Institute of Technology, Rourkela on 12th and 13th Feb 2021. Five papers from DC were presented in the conference. All five papers are accepted, they are yet to be published.

Anti Manipulation Combination Lock Mechanism -

The Anti Manipulation Combination Lock Mechanism (Zafer) Project is in the process of patent application through the Intellectual Property Rights Cell of NITT. The first stage involved pitching the idea to the IPR Cell in front of a panel upon filling forms 5 and 5A, describing details of the invention.

Once the panel approved the idea to be pursued as a patent, the next step was the prior art search. This was carried out by a third party called DexPatents. the invention was found to be novel, and the likelihood of patenting the invention was found to be 'High'

Once the prior art search was done, a third party called Altacit was contacted to prepare the patent draft. From our side (the inventors), a detailed form specifying the technical details and some other application

details was filled and provided to them to prepare the draft. At the time of writing this report, Altacit is expected to submit the preliminary draft in the first week of May 2021, after which the inventors can review it and suggest changes or corrections to be made.

COLLABORATION

Battery Backup

An Alumnus of NITT, Mr. Subhash from the Batch of 2012, approached us with a problem statement to design a battery integrated luggage with laptop charging capability. Since the batteries are enclosed in fabric, a novel system for temperature management is to be designed. Two members from DC namely Kevin and Dhivakar worked on it.



Young Techie 2.0

As part of the Young Techie 2.0 initiative by the Pragyan Social Responsibility team, conducted to encourage school students to innovate, two members from DC mentored two school student teams. They held periodic meetings with the teams to help them ideate and solve problems in their ideas.



ENTREPRENEURSHIP CELL

Foreword from the Core of '20-'21



It was a challenging year for all of us. Our team adapted quickly and believed that whatever the situation ahead, the show must go on. I am glad to say that we have done a great job, introducing new initiatives like Startup Snippets and Pathfinders this academic year, fostering the spirit of entrepreneurship. Thanks to the wonderful set of juniors who made this possible! Cheers!

INITIATIVES

Startup Snippets

Startup Snippets was an initiative to increase awareness about the latest developments in the entrepreneurial world. Posters containing the latest updates and developments related to entrepreneurship and business are posted on our social media handles every Sunday, 11 am. This initiative received a lot of positive responses from outside the campus as well.

Pre-Incubation Program

"Pre-incubation program" was the brainchild of Entrepreneurship Cell NIT Trichy, aiming to facilitate and promote budding startups on our campus. We have laid the initial structure of the program and formed a separate team to take it forward. This program aims to transform startups from the idea stage to the seed funding stage.

Pathfinders

Pathfinder was a flagship talk series, where we interview leaders in the domains of business and entrepreneurship and witness them share their journey on what makes and breaks a budding entrepreneur. The session was streamed on our YouTube channel as well. Three pathfinder sessions were organized by E- Cell NITT. The first 2 were live-streamed on YouTube, whereas the third was recorded and uploaded due to students' end semester schedules.

EVENTS

Hult Prize

The Hult Prize was a United Nations partnered global, year-long competition that crowd-sources ideas from college students across 120+ countries after challenging them to solve a pressing social issue. 21 teams with 3/4 members per team registered for the event. 12 teams were shortlisted for the finals based on the preliminary pitch they submitted. The teams pitched their modified business plan based on the mentoring received from the Entrepreneurship Development Programs and 3 teams were selected as Winners (first, second and third).

Innovation in Isolation

This event was conducted in collaboration with the Students' Council Talentine. Innovation in Isolation was a business model contest with a set of 2 challenges to test the business acumen of the participant. We have received 18 applications out of which 3 ideas were announced as winners.

Ventura

Ventura was an international business model competition conducted by E-Cell NIT Trichy. About 250 applications were registered for Ventura'21. 10 teams each from the 5 tracks (Agri/Clean Tech, Deep Tech, Edu Tech, Health Tech and General Track) were shortlisted for Phase-2. A winner was announced for each track and was eligible for cash grants worth up to 2 lakh INR and mentorship resources from our track partners.

Entrepreneurship Summit

The entrepreneurship summit was a 2-day virtual summit held on 27th and 28th February. The theme for this edition was "Channeling Innovation". It included 2 workshops, 9 fireside chats, women in content creation conclave and networking sessions. A total of 201 people attended the summit. The attendees got to know various aspects of entrepreneurship, leadership and insights on the stock market.

Webinar Session in collaboration with Y-Combinator

An interactive AMA zoom session was organized with Mr Michael Seibel, CEO at Y-Combinator and Mr Vivek Ravisankar, Co-Founder/CEO at HackerRank. 416 people registered for the event and had an audience of about 160.

COLLABORATION

We had collaborated with startup incubators such as iCreate, Ulnccept, Reflex Capital, and First World Accelerators in the form of cash grants and mentorship for eligible startups.

An MOU was made with LAWYERED, a platform that offers legal assistance to startups. They provided a Legal Toolkit for startups referred by E-Cell NIT Trichy for an amount of 1 INR.

We had collaborated with Freshworks for Ventura. The winners of the competition were rewarded with resources worth 1,000,000 INR.

COMPETITIONS

Sruthi P & Deekshitha Hima Priya represented NIT Trichy as Regional Finalists in Hult Prize Mumbai Impact Summit '21. Hult Prize is an international competition that challenges college students to build social enterprise and solutions for global issues.

Arvind Ajith and his team won the first prize for the Best Management Team event held as part of Ushus 2021 by Christ (Deemed to be University), Bangalore. It included various rounds from all the domains, including HR, Operations, Marketing, Finance, and Business Analytics.

Sabari participated in business model competitions conducted by IIT Bombay and IIM Indore.

Aravindhan T was a finalist of the AI Gaming competition held by IITM Shaastra- The competition focuses on the multi-agent problem in Deep Reinforcement Learning, where there are two agents in a football environment, each supposed to maximize their goal and dodge their opponent. The agent with the highest number of goals after a given time step is the winner.

CAMPUS DEVELOPMENT

Startup Internship Program

An initiative by E-Cell of NIT Trichy that aims at promoting interest in entrepreneurship among students by giving them the opportunity to intern in startup companies. This program helps students gain real-life experience and build the required skills.

NAKSHATRA

Foreword from the Core of '20-'21

It's been a tough year. To use the old saying, tough times bring out the best in tough people. This foreword is really a vote of thanks to everyone on our team because the only way we made it through 2020 was because they stood by us. From Stardust, one of the last offline events held in college, to World Space Week, which was carried through by a group of people who had never seen each other in person, their passion and hard work keep the club standing.

What do we do as a club, though?

We popularise astronomy through stargazing sessions, software workshops and write about the developments in astronomy/astrophysics. Look up our work on our Medium blog under the same name and look out for inductions. If you're an astronomy enthusiast, there's no better place to be.



INITIATIVES

Stardust - February 2020:

Nakshatra's annual event where we celebrate astronomy, astrophysics and all things space-related. In 2020, Stardust hosted Mr Antillen Jacob's talk on the Life Cycle of stars, as well as student lectures, a quiz, software workshop on DS-9 and a stargazing session.

Webinar - September 2020

As part of our collaboration with STAR Labs Surat, we held a webinar on space entrepreneurship by Mr. Sunny Kabrawala, founder, STAR.

World Space Week - October 2020:

Along with Team Pragyan, Nakshatra organized events for WSW'20, including guest lectures by eminent personalities like Dr. David Reitze, Dr. VR Lalithambika and Dr. BN Suresh, as well as online events like space-themed web puzzles, design and writing contests and more.

COLLABORATION

STAR Labs, Surat - Hosted a webinar on the topic of Space Entrepreneurship by Mr Sunny Kabrawala, founder of STAR and director at Avkashyaan Pvt. Ltd.



PROFNITT



Foreword from the Core of '20-'21

The previous term has been a tumultuous one, transitioning into online semesters for the first time in the history of NIT Trichy. We, The core, faced many unique challenges as a result.

However, we feel honoured to have taken up the club's helm under such trying circumstances, and learning how to lead the club and adapt 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

To get the team members a feel for basic economics and finance, we introduced group knowledge-sharing sessions on Corporate Finance by Aswath Damodaran, an esteemed professor from the New York University Stern School of Business, a famous finance hub. We also worked on the Smylo project, a neo banking project which aims to democratize access to banking services for Indian in rural areas through digital banking rather than relying on bank branches, in collaboration with Navriti Technologies. The work includes understanding the working principles of neo banking and developing the frontend and backend systems to implement the same.

Tableau through guided tasks. These tools are essential for all fields of finance, whether it be investment banking or stock trading, for data modelling and analysis. We have also conducted an event titled “Planning your career after engineering,” an informative session conducted by Mr. Arpit Agarwal, a Principal at Blume Ventures, a prominent VC firm, and also the founder of Pragyan, the technical fest of NIT Trichy.

EVENTS

We started off with training all members of the club on valuable data analysis skills using popular tools such as Microsoft Excel.

CAMPUS DEVELOPMENT

We have partnered with BharatX, a FinTech startup founded by the original Core members of ProfNITT, to develop NITTPay, a UPI-based payments app meant to be used within the campus by all students. The app is ready for initial testing and deployment; however,

it has not yet been utilized due to the prevailing circumstances of COVID-19, which has resulted in the campus remaining closed.

COLLABORATIONS

During this term, ProfNITT has collaborated with “Finstreet,” a company specializing in finance coaching, and has partnered with many top IITs and IIMs to provide certification courses. In particular, we have provided an opportunity for students of NIT Trichy to join the course “Finstocks,” a practical stock market course in collaboration with the major broker 5paisa, at a reduced price.

We have also collaborated with EduCBA, an education consulting organization that conducts various courses related to finance, software, and business skills. All members of ProfNITT are eligible to apply for the CFAT (Corporate Bridge Financial Aptitude Test) free of charge and gain access to live projects and free certifications after obtaining a good result.



PSI RACING

Foreword from the Core of '20-'21



The hurdles that the pandemic presented for the term of 2020-2021 were daunting. Yet, we galloped over them to finish a record-equalling 5th best out of the 150 teams participating in the most prestigious off-road buggy design event in the country, BAJA SAE India 2021. The achievement resulted from the remarkable adaptability and unity that each of the 32 members of the team showed while working relentlessly towards Racing Our Dreams.

INITIATIVES

Complete All-Terrain Vehicle Simulation

The pandemic meant that physical manufacturing of the ATV was impossible. Still, we built the complete car in a virtual mode using CarMaker, an IPG Automotive software tool used by automotive industries across the world to model and simulate cars.

Four Wheel Drive ATV

We have started the foundation for fabricating a 4WD ATV for the first time since our club's inception. A basic CAD layout and FEA analyses have been done for the 4WD ATV.



EVENTS

Techathlon 21'

The annual Techathlon workshop was conducted along with DC, NITT, where we had sessions on Automotive Engineering, Data Acquisition Systems, the basics of finite element analysis and hands-on sessions on DAQ systems and FEA.

Whreels Quiz

We conducted the Whreels quiz for the first time this year, with the quiz being based on automobile related Movie trivia.

COMPETITIONS

BAJA SAE India 2021: All India Ranks

- Preliminary Quiz: 2nd of 150
- Design Event: 5th of 150
- Cost Event: 1st of 150
- Overall Rank: 5th of 150
- Gradeability Event: 3rd of 150
- Maneuverability Event: 3rd of 150
- Overall Dynamic Events: 4th of 150







RESEARCH SCHOLARS' FORUM

INITIATIVES

RSF had planned to create a platform to share information about various post doctorate fellowship opportunities and job opportunities for scholars. More functionalities are added to the existing website to execute the plan. This forum will act as an easy medium for scholars to find the future opportunities. RSF have also created a similar platform in the website to share the seminar talk and viva voce details of each scholar. RSF will make these facilities fully functioning from the next semester onwards.



EVENTS

Guest Lecture on Laser powder bed fusion additive manufacturing (L-PBF) of Ni-based superalloys by Dr Naresh Nadammal from BAM Berlin Germany. 73 students participated in the online event. The event gave participants insight into emerging additive manufacturing techniques.

Guest Lecture on Current Trends and Its Application using Machine Learning Techniques. Dr Arul Valan from NIT Nagaland handled the talk. He explained the basics of ML and discussed the trending research fields. 98 students from NIT Trichy have attended the event.

Guest Lecture on Scientific Writing and Publishing by Prof G Arthanareeswaran from Department of Chemical Engineering NIT Trichy. The online event focussed on training students on making a well-written and effective manuscript for scientific publishing. More postgraduates turned up for this event, which made the participants count to 190.

Guest Lecture on postdoctoral fellowship overseas by Prof G Arthanareeswaran from Department of Chemical Engineering NIT Trichy. 89 participants turned in for the event. Participants were able to identify the need for a post-doctoral fellowship. The prestigious universities and their application procedures were explored. The requirements of postdoc and how to prepare for the same were elaborated.

Two Day Online Workshop on Grid Connected and Standalone Microgrid Design using Homerpro was organized by RSF NITT to train students with HomerPro, a microgrid technical evaluation software. In addition to training in the software, the need for microgrids and trends in renewable energy sources were also explained. Training in the software was done using real-time case studies. 89 participants had undergone the training.

Foreword from the Core of '20-'21

It's been quite a unique journey this year, with a completely online mode of interaction and collaboration. Initially, the transition was a bit hard as some of our projects were entirely hardware-based, and we had to find ways to work around by importing them to a simulation platform and rework on them. But as we progressed through the year, we revamped our workflow to adapt to the circumstances.



This year, we continued some of the long-term research projects started in the previous years that are feasible to be worked on online. A couple of them would be resumed on campus. Along with these, we have started new projects and were able to reach the goals set for this academic year for most of them.

We plan to extend the objectives for some of these projects and continue working on them. We have also submitted some of our works to international conferences for publication. Our works are documented on our website and GitHub so that interested people can check them out. In addition to our projects, we have participated in several competitions this year with the advantage of being online. We are happy to say that we have won most of those we participated in.

As every year, we conducted many events to engage the student community in robotics, and technology. We introduced quizzes with ice-breakers and fun-filled questions to engage students in these times of distress.

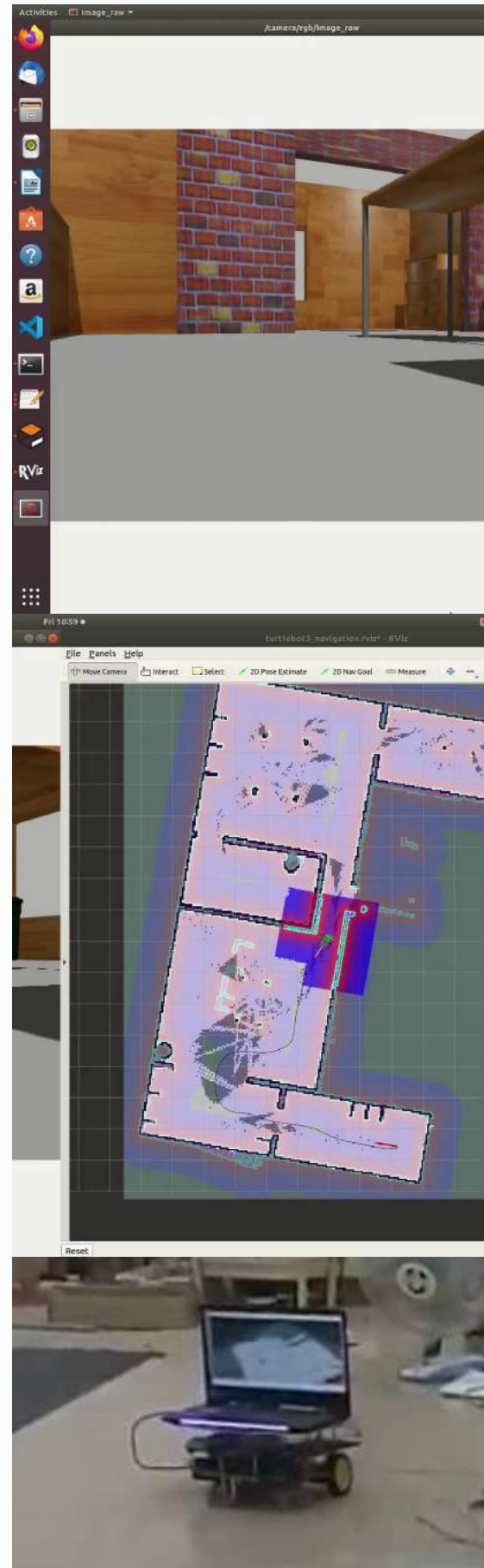
For the first time, we conducted the Genesis workshop entirely online for free and documented the sessions to introduce the freshers to robotics. Several competitions have been conducted in collaboration with the Student Council, Pragyan and independently throughout the year. We made efforts to be inclusive of students with limited resources and facilities wherever possible while coming up with our events. Students are also provided with resources required for gaining knowledge and preparing for their club inductions.

The induction process is designed by keeping the present situations, student experience and our requirements in mind. So, even those who are venturing into the field for the first time can find comfort in solving the tasks while learning with the resources and guidance of RMI members when needed. And lastly, we had knowledge sharing sessions, webinars and discussions with our alumni who have provided us with valuable guidance and suggestions. In the following years, we plan to extend these to the rest of the student fraternity as well.

INITIATIVES

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 decentralised 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. Currently, we have used reinforcement learning combined with imitation learning to get the best policy. The A3C algorithm is implemented, and LSTM (RNN) is used for temporal dependencies. We ran simulations of multi-agent systems (including cloud computing platforms) implementing the above modules.



Open Quad

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. The Gazebo is used for simulation. This year, the focus was on the vehicle to infrastructure communication (V2I) of the quad. In this mode,

messages from the open quad could be broadcasted to the cloud directly. And this information can be enriched with other systems in the surrounding like weather management systems etc. And the cloud, using its petabytes and zettabytes of data, can predict the weather conditions and other situational events in real-time, and send the information back to the quad/central server. To simulate this scenario of smart technology using the Internet of things, we have utilised AWS IoT suite of services. We created OpenQuad instances and connected them to the AWS IoT Core service to send the real-time information captured by the quad to the cloud, which can be utilised in multiple ways. Create a trigger message using a SQL query following AWS IoT rules when there is an obstacle in the path, such as a tree, bird etc., during its aerial flight. The information reaches all the corresponding team members (at different locations) if there is any obstacle in the path, and necessary actions can be taken soon.

MARKO - Machine Assisted Rehabilitation of Knee Osteoarthritis(Research paper under review by iNaCoMM conference):

Knee-osteoarthritis is one of the most common forms of arthritis that people above the age of 40 and even a few youngsters suffer from. Physiotherapy, pain relief, anti-inflammatory medications are the few available treatments. The permanent solution is to do surgeries like osteotomy, knee-joint replacement. Post-surgery rehabilitation can be divided into two stages - Stage 1 (THERAPY): To gain control over the knees; Stage 2 (TRAINING): To strengthen the muscles around the knees. Robotic therapeutic tools such as CPM (continuous passive motion) machines exist, cutting down the huge expenditure of frequent consultations, but they support only stage 1 of rehabilitation and not stage 2, which requires a trainer to guide the person to do heavy exercises such as cycling.

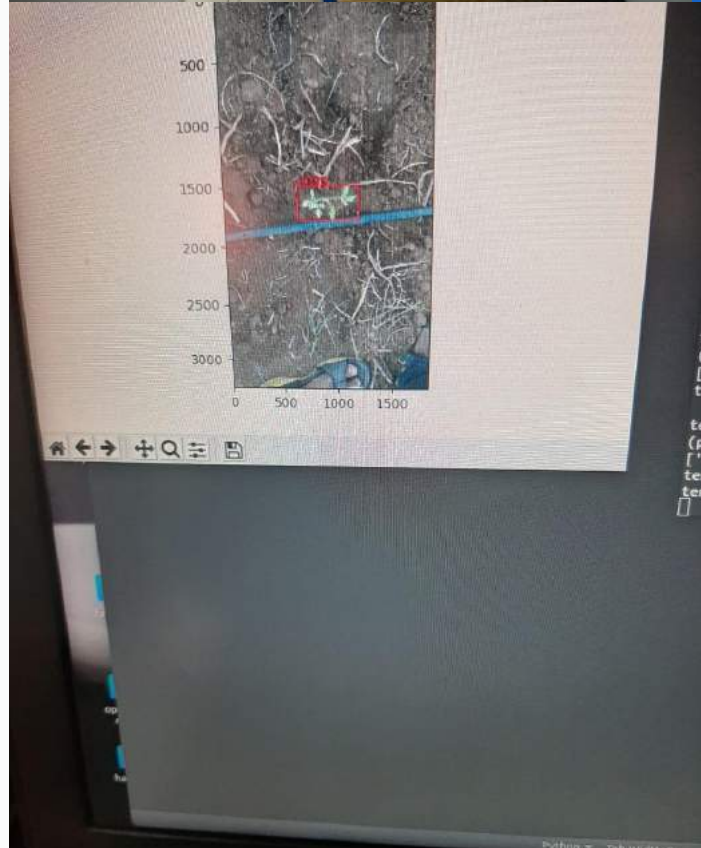
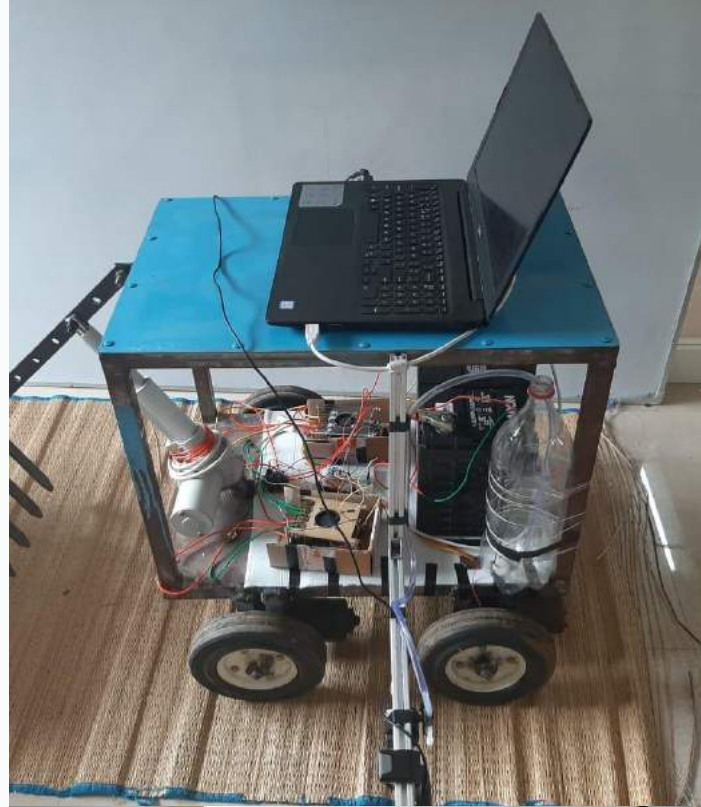
MARKO aims to Automate both stages of rehabilitation, integrate them in the same device and make the recovery process interesting and motivating by interfacing stage 2 with a gaming context. The electric linear actuator controls the motion of the leg, which is attached to links connecting to the actuator. For stage 1, a four-bar linkage slider-crank mechanism assists the leg, performing physiotherapy in a CPM. For stage 2, EMG signals are taken to know the intent and direction in which the person puts the effort to move his/her leg, which is a parameter of control for the game, allowing the person to train while gaming.

Precision Agriculture Bot (PAB)

PAB is a robot that aims to automate the laborious process of removing weeds and spraying fertilizers. The de-weeding process is a crucial process that should be performed manually every 3-4 weeks so that weeds don't overrun the farms. Spraying farms with fertilizer is very important to have higher yields in farms. Both these processes are very labour intensive and time-consuming. Current robotic solutions try solving both these independently by employing two different robots, one for de-weeding and one for spraying fertilizers. Our proposed robot can solve both at the same time.

The proposed solution is a lightweight four-wheel-drive robot platform to traverse farms. It is mechanically actuated by hoeing ploughs to remove weeds. Computer vision enables a spraying mechanism to spray microdoses of fertilizers directly on crops. For weed detection, we developed a Deep Learning model for the task of object detection. We used FRCNN architecture to detect crops out of the images.

The current method of employing manual labourers is getting expensive, as labour wages are steadily increasing. Pesticides and fertilizers prices are increasing, and the traditional way uses a lot of chemicals than needed. Hence, robotic solutions are a viable alternative.

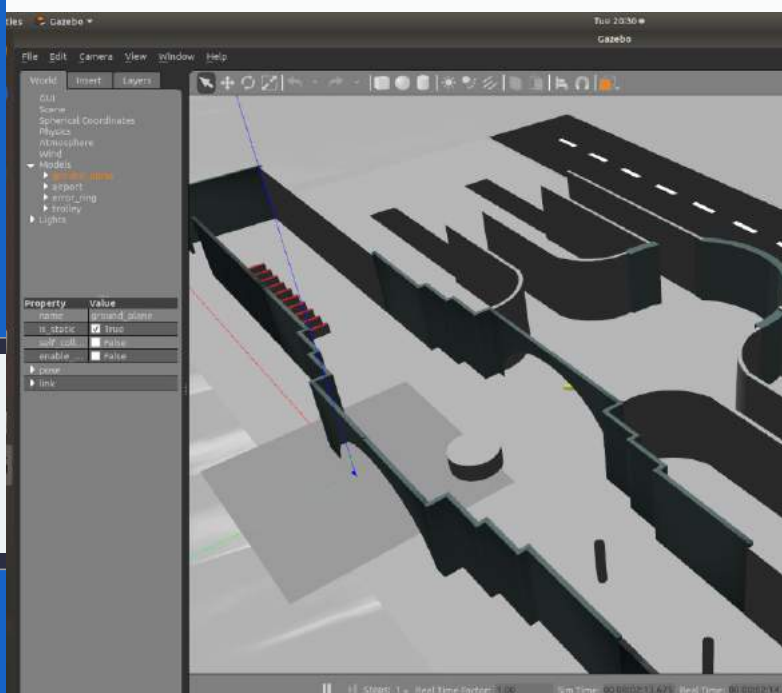
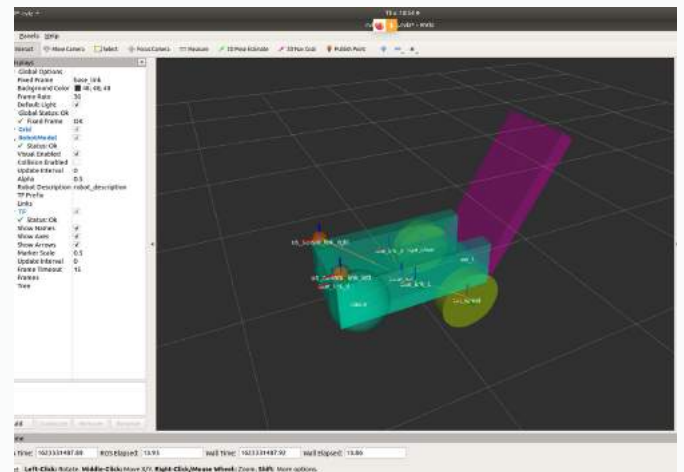


Automated Trolley

The availability of trolleys at the right place in airports and shopping centres is a big concern for authorities, and often, a huge human force is employed to deal with the same concern. Through this project, we propose building

an automated system which after being used by customers returns into its parking point without needing any human intervention. The other problem which we are dealing with is avoiding accidents while taking back these trolleys with humans and surroundings using obstacle avoidance.

The proposed design uses ultrasonic sensors to get information of obstacles and using the trilateration data, we will localize our system within the environment, and a relative coordinate is fetched using the same. Gmapping is used to mark system position within the static map of the airport, and using A star (A^*), we get the required path to return back to the parking lot. ArUco markers are used to increase the precision by acting as a landmark. The airport camera is used for the input to the dl model. A Convolution Neural Network-



based DL model is used to get the driving instructions which will also take care when any dynamic obstacle (for, eg. Humans) interfere with the path, and the DL model is fetched with the image to decide on path planning by avoiding all obstacles.

H.I.D.Q - Hybrid Inspection Drive Quadcopter

Typical human inspection has constraints in narrow spaces, dangerous environments and does not always ensure precision. Thereby the damages at inaccessible areas are left unnoticed, which leads to heavy collateral damage. The use of robots for inspection and quality assurance provides dependable results with high precision. This predominant issue calls for the need to build an efficient and innovative method to inspect remote regions. A convertible hybrid drive quadcopter is manually controlled

to move across inaccessible places as a drone or a 4-wheeler convertible using a self-transforming mechanism, equipped with a camera to inspect various industrial systems and check for defects and anomalies using Machine Learning and Image Processing algorithms at the controller side. The same BLDC motors power both the wheels and the propellers in each model and a novel idea for power engaging disengaging mechanism. Automated crack and rust detection using integrated Image processing and Deep Learning using Convolutional Neural Network are implemented.

HuRoS - Humanoid Robotic System

HuRoS is aimed at mimicking two-legged animals. It's a developmental platform for building humanoid robots and prosthetics. A model of the robot mimicking the functionality of the hardware with appropriate

appropriate joint constraints have been developed. The kinematic mathematical model of the robot has been developed. Additional constraints are to be framed to control the over-actuated system.

CHAOS - Crop Harvesting's Automated and Optimal Solution

Automation is an important current trend and development in the field of agriculture. The agriculture industry worldwide is facing many problems, including labour shortage and increasing costs. Currently, much of the work in the field of fruit harvesting is manually done (labour-intensive), time-consuming and an expensive process. Moreover, existing robots are customized only for a particular crop, are slow and bulky. Therefore, employing robotics to automate the multi-crop harvesting/picking process of fruits/vegetables becomes an essential requirement to solve such issues. An intelligent and efficient robotic system that utilises a camera feed to identify ripe crops using Almage-

Processing algorithms. A Robotic manipulator (4DOF) with a soft gripper as its end effector is used to pluck the crop using Inverse Kinematics. We developed a prototype of 4DOF robotic Arm and mobile base utilising the required hardware, 3D printed the mould for the soft gripper and built the prototype for the same. We collected the images of fruits and vegetables (dataset) for training and testing the YOLO deep learning CNN Model for Object detection and localization. We utilised find object 2D for object detection in Gazebo Simulation.

Vitarana Drone (eYantra)

Package delivery and return using a drone over an area in Gazebo. Location of pickups are given, and drop locations are either given directly, or marker detection must be performed to drop the package. The final solution includes PID control over position and attitude,

integrated bug algorithm, marker detection, dynamic grid mapping using floating numbers, hybrid A* path planning with smoothing, unique height control navigation algorithm for obstacle avoidance and variable yaw control to optimise the drone's trajectory and speed.

EVENTS

RMI Quiz (5th October 2020)

The RMI 30-minute quiz, which was conducted online on 5th October, saw a massive response from all years and various departments. The quiz contained a good mixture of different domains of robotics to test one's technical and problem-solving skills, which intrigued the minds of fellow robotics enthusiasts. Not just robotics, it also included some fun elements which the participants found engaging and exciting to solve with such massive participation. We received fantastic feedback from all the participants. This event was conducted in collaboration with the Student Council, with prizes worth Rs 3000.

RMI Hybrid Hackathon (28th January 2021)

It was a free online event conducted exclusively for NITT first years in Microsoft Teams. Around 50 students participated in this event. First years were introduced to the basics of Robotics through this event.

Genesis'21 (20 - 25 April 2021)

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. Around 200 students registered for the workshop.

COMPETITIONS

- **1st place** in **eYantra** 2020-21, All India Robotics competition held by **IIT Bombay** with over 35,000 competing teams. Project - Vitarana Drone
- **NITT, Pragyan '21:**
 - **2nd place** in **Circuitrix**
 - **2nd place** in **Sangam**, Healthcare and Agriculture - Team MARKO
 - **3rd place** in **Sangam**, Healthcare and Agriculture - Team CHAOS
- **IIT Madras, Shaastra 2021: 1st place** in ARDRILLO
- **IIT Hyderabad, Elan and ηvision:**
 - **2nd place** in Paper Presentation
 - **4th place** in Code Arduino challenge
- **IIT Bhubaneswar, Wissensire: 1st place** in Mech colloquia
- **NIT Durgapur, AAROHAN '21: 3rd place** in Innovare
- **SRM University, Xion:**
 - **1st place** in Robo-Dock competition
 - **1st place** in Quizzard contest
- **SSN College:**
 - **1st place** in each of CSE, EEE, Mech and Biomedical Paper presentations
 - **1st place** in Papyrus IT Presentation event
 - **1st place** in Inventino contest
 - **1st place** in Mech Technical Jam
 - **2nd place** in e-Biomart Biomedical contest
- **BITS Pilani, APOGEE: 2nd place** in Paper presentation
- **DDUC, Delhi: 3rd place** in Technix Tinker contest
- **IIT Roorkee, Cognizance:**
 - **1st place** in CSE paper presentation
 - **2nd place** in ECE paper presentation

- **NITT, Synergy: 1st place** in Paper presentation
- **NITT, Currents: 1st place** in Colloquium Paper presentation
- **NITT, Probe:**
 - **1st place** in Paths and holes
 - **2nd place** in Embedtronix
- **Sardar Patel College of Engineering (SPCE), Mumbai:**
3rd place in project presentation and technical paper presentation.

CAMPUS DEVELOPMENT

The Open Quad project has been made open-source, easy to develop, and reproducible by dockerising the simulation environment setup using docker containers. Anyone who is interested can learn from the existing GitHub repository and also contribute to that if they wish to, even if they're not a part of the club. The project has been added as a part of the GitHub externship program.

The RMI 3D printer has been upgraded for campus-wide utilisation. Anyone who requires a part to be printed can send the STL file and pay the material charges to utilise the 3D printing services.

Foreword from the Core of '20-'21



We at Sigma aim to recreate excellence by equipping students to realize their dreams in management, consulting, and analytics. We are elated by the fact that Covid-19 (Online Semesters) hasn't slowed us down, and we have conducted over 5 events, completed 4 projects, competed with prestigious institutions in more than 10 competitions, and published over 10 articles in the past year.

INITIATIVES

The economic impact of COVID-19 on different sectors and markets.

There's not one person you'll come across today (from a distance of course) who wouldn't claim that the Covid-19 pandemic has been a blow to the economy worldwide.

"But how much exactly, and how can we fix it?" is a question that has got us all wondering... We at SIGMA have delved a little deeper, hoping to uncover the unknown.

Check out the summary of our report at:

<https://bit.ly/COVID19ReportSummary>

or read the full report at

<https://bit.ly/COVID19EconomicReport>

COVID -19, An industry report

We analyzed the Operational, Financial, and Market Implications of the global Pandemic on various Industries around the globe. To better understand how the pandemic hit various industries, we have categorized the Industries into Primary, Secondary, and Tertiary Sectors. We look at the implications sector-wise and also few companies as specific examples from each sector.

We also analyzed and defined the pandemic and its characteristic effect on various human machinery, quantified the Pandemic, and looked at governance strategies implemented to control the Pandemic. Then, based on the quantification, we drew inferences and analyzed them by drawing conclusions and localizing them. And finally, we attempt to mitigate the issues found and briefly look at how the pandemic could've been handled in a better way.. (June 2020)

Read the full report at <http://bit.ly/Covid19IndustryReport>

Feasibility Analysis of E-Cycles in NITT

We are analyzing the feasibility of deploying battery power-assisted e-cycles on the NITT campus. The study covers various aspects, namely, Operational feasibility, Financial feasibility, technical feasibility, etc. Finally, we propose the most cost-effective plan.

Demand forecasting in supply chain management

Published an article explaining the various demand forecasting methods used in industry and a project report on the time series forecasting model built to forecast demands of department-wide sales across 45 retail stores.

EVENTS

Case Closed - The third edition of the case closed workshop which was attended by 120 freshers gave a brief introduction to some popular frameworks used to solve case studies. In the first half of the workshop frameworks introduced were - porter's 5 forces, 4Ps of marketing, 3Cs, market-entry framework.

The second part of the workshop was focused on using these frameworks to solve case studies and also learning new concepts like Just in time, marketing techniques, market penetration strategies, and a lot more. Real business situations/problems from KFC China, Coca Cola, General Electric, Uber were discussed and the frameworks taught were used here.

Guest Lecture on Consulting

by Pratik Ranjan, a Senior Associate at Boston Consulting Group for over 300+ participants. The lecture gave an insight into the type of work involved in Management Consulting and what such elite companies look for in a candidate.



Taking Up Highers in Management – Mr. Sanjay Dhingra, the former Admissions Officer of ISB’s YLP Program and an alumnus of the ISB PGP batch of 2012, gave a live webinar about the program and how candidates can shape their profile for the same.

COMPETITIONS

- All India First in the P&G Case Study Competition
- First Place in The Ultimate Manager during Pragyan’21

CAMPUS DEVELOPMENT

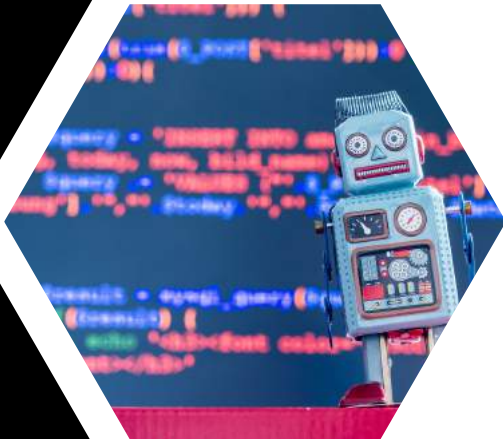
The club worked with the 2K market to improve their facility layout in order to make the best use of the space and ensure ease of access to the customers.



SPIDER R&D

Foreword

Despite the uncertainties brought by the Pandemic during the last academic year, Spider R&D club was quick to adapt and switch to an online mode of collaboration. We conducted Inductions for the first year in August-September 2020, providing them with simulation software for hardware related tasks, which ensured that the applicants need not go out to buy physical components.



There were mentors assigned to each one of the registered students, for all the four profiles (Algos, App Dev, Tronix, WebDev), who guided them throughout the duration of the 1 month-long induction process. Thus, Spider was able to carry out the induction process smoothly.

Following inductions, the club members started brainstorming projects for this academic year. The seniors (4th years) were a constant support throughout the ideation process and the project work thereafter. We were able to complete a good number of projects in this academic year and laid foundations for 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.

We also conducted KSS (knowledge sharing sessions) for juniors in the club on topics like Git, ROS (Robot Operating System), etc. In April 2021, we organized a set of competitions for the first years under the umbrella of Spider Week, which consisted of coding contests and Problem statements from all the four profiles of Spider, including a Workshop on the basics of Web Development.

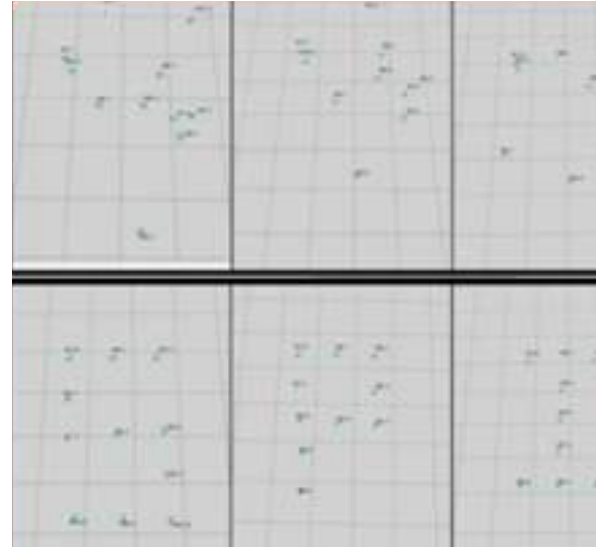
We first provided the first years with all the basic resources needed to learn, which was followed by contests and problem statements. Spider Week saw a whopping 450+ registrations from the first years and served as their first dive into the world of technology.

Our club members also participated in numerous hackathons and competitions conducted by reputed organizations, including Sangam Hardware Hackathon, Smart India Hackathon 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

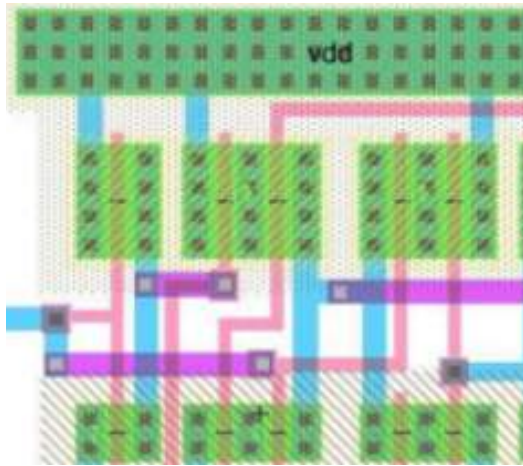
Bee-Bots 3.0

Beebots is a swarm robotics project that aims to explore swarm intelligence and coordination using biologically inspired algorithms. It explores the fascinating idea of simple local behaviors giving rise to global action. Project beebots is currently working on shape formation and shape recovery behavior in a swarm after obstacle interaction.



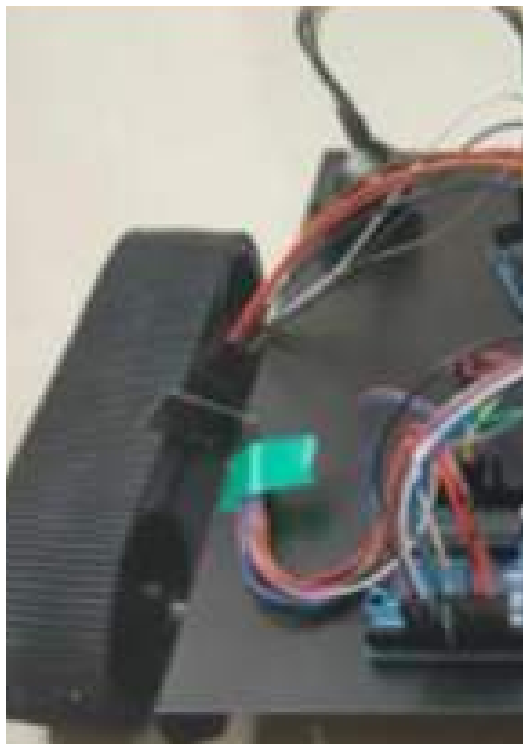
UAV-UGV

A cooperative parcel delivery system for an unmanned aerial vehicle (UAV) and an unmanned ground vehicle (UGV). The UAV enhances the poor traversability of the UGV by providing a wider range of scanning and mapping from the air and also responsible for last-mile delivery of parcels. Whereas UGV carries the parcels all way long and provides the charging support for UAV.



Standard Cell Library

This project attempts to develop a custom-made Standard cell Library for the newly open-sourced 130nm Sky-water Design Files. This project attempts to develop an industry-standard VLSI workflow at a club level using only open source tools.

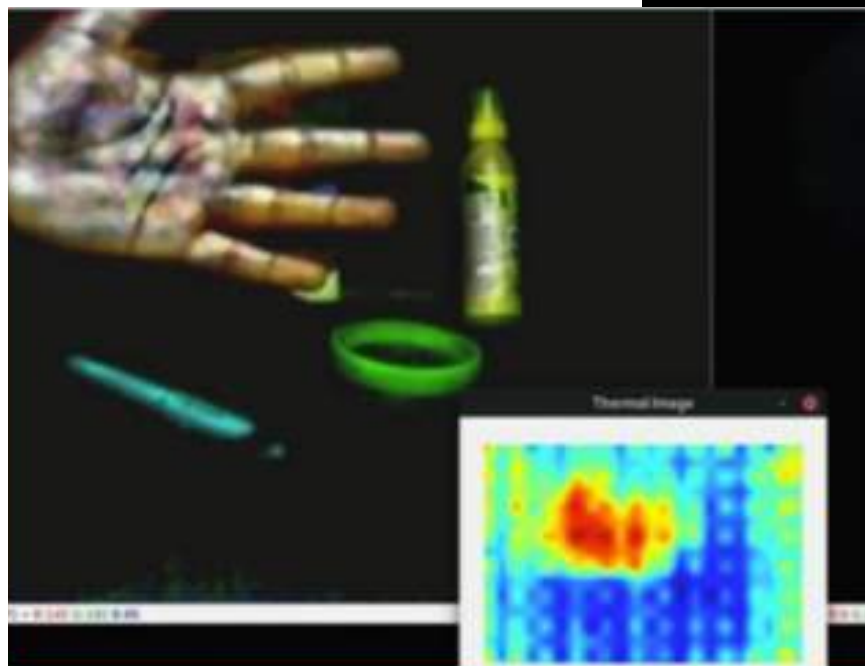


Landminer (Pragyan '21 Sangam Hardware Hackathon)

A landmine detection robot-assisted with the principle of GPR that uses DL pipelining, continuous track, and an arm mechanism for area probing. The transmitter antenna transmits the EM waves. Upon incidence on the landmine, it retracts back and is received by the receiver antenna. On running the simulation, we can identify the presence of a landmine by a sharp hyperbola in the C scans.

DarkSight

Imaging in low light is challenging due to very low photon count and low SNR (signal to noise ratio). Our network operates directly on raw sensory data from cameras and aided by thermally imaged shots of a low-lit environment and maps to high exposure shots of the corresponding environment producing promising results.



Vitarana Drone (EYRC '21 @IIT Bombay)

Vitarana Drone is an autonomous parcel delivery drone incorporated with multiple sensors and cameras whose feedback is used by the drone to avoid the obstacle and reach the destination in the shortest period of time. We also have used a scheduling algorithm to make drone smart enough to decide the order of tasks.



Project - RECAL UAE CHAPTER

An app to keep in touch with REC/NIT Trichy alumni based in the Middle East. It allows the user to connect and network with other REC/NIT Trichy alumni across the Middle East region, build

build new connections with your long-lost college friends, enabling social and business professional networking.



Lower-Limb Exoskeleton - Exosim

This project aims to develop a lower limb exoskeleton simulation package in ROS-melodic and gazebo. It provides necessary interfaces and plugins for the control of the joint angles of the exoskeleton simulation.



Crawl-Locator (Pragyan '21 Sangam Hardware Hackathon)

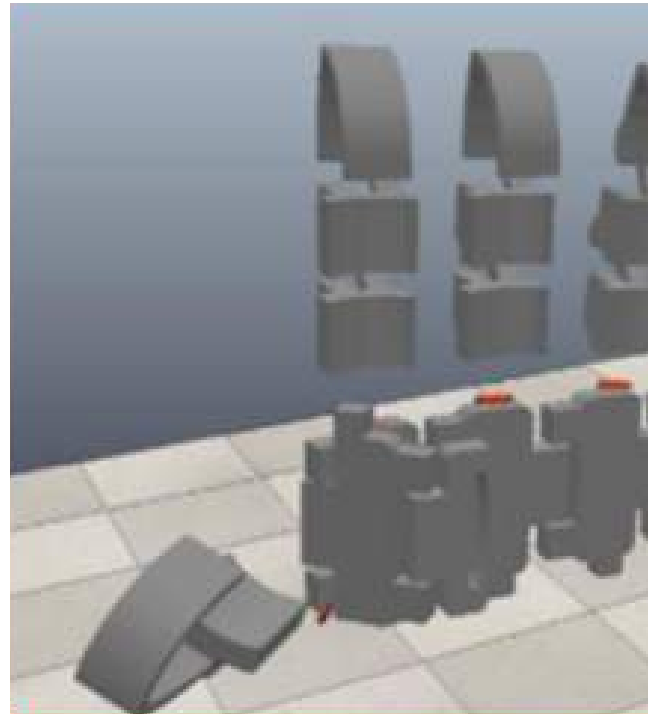
A disaster relief robot meant to operate in extreme conditions and dangerous locations to locate stranded victims in the debris after a disaster and transmit their location back to the relief team. It's an amphibious robot that can be controlled remotely from distances of up to 5 Km.

OTA Programming Module

The project aims to give AVR Microcontrollers the ability to receive and update their applications wirelessly. It makes use of a NodeMCU to connect to the WiFi which then serially communicates any updates it receives to the AVR Microcontroller.

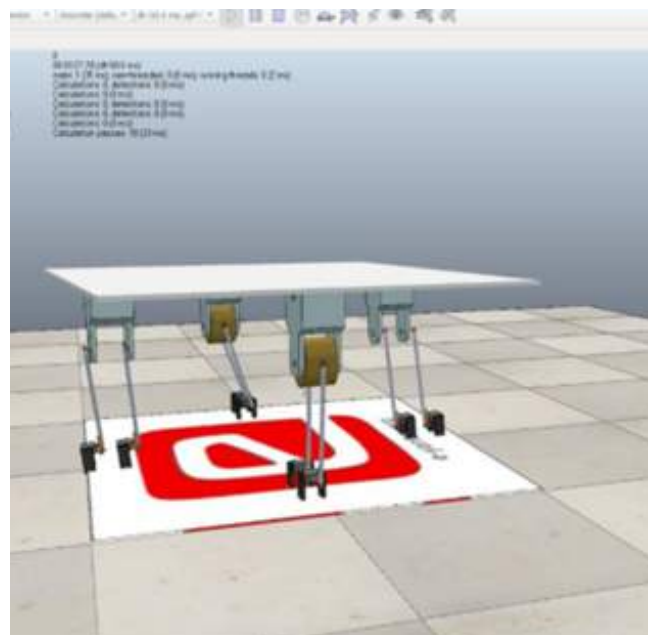
GISiL (Sangam '21 Hardware Hackathon)

GISiL(Gesture Interpreter for Sign Language) provides a cost-effective way to translate sign language into conventional speech using wearable glove technology by utilizing mini-potentiometric pots in gloves with 3D printed frames to detect finger movements. The tech gloves are paired with a smartphone to translate the signs formed using ML and NLP to give audio and visual output.



Nirikshak Bot (EYRC '21 @IIT Bombay)

A conveyor belt keeps dropping balls at regular intervals on the ball balancing platform. The goal is to make the balls traverse through the maze on defined paths within a stipulated amount of time in order to determine the quality of the platform manufactured.



Project - CAPTION BOT:

Our project uses methods from computer vision to understand the content of the image and a language model from the field of natural language processing to convert the understanding of images into words arranged in the right order. It can be utilised for assistive vision by converting obtained captions to audio which would benefit visually impaired people.

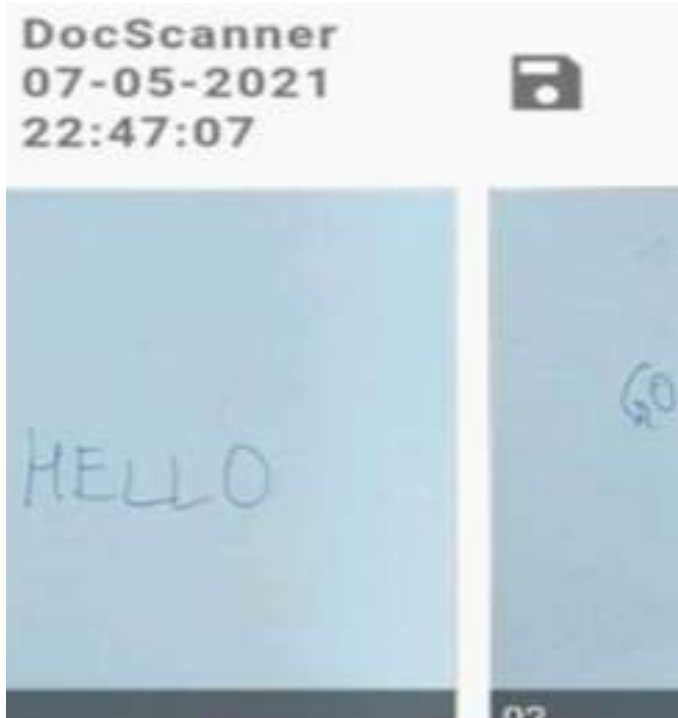
Doc Scanner App:

A DocScanner app built in flutter supported by a few external plugins, consisting of features such as image capture/selection, edge detection based cropping, self-cropping, multiple effects including HSV modulation, contrast and GreyScale modulation, pdf conversion, pdf merging, compressed sharing, direct image download from the app, etcetera. Base functionality is over, would be ready for release with a few UI enhancements.

young boy in swim trunks is jumping into t

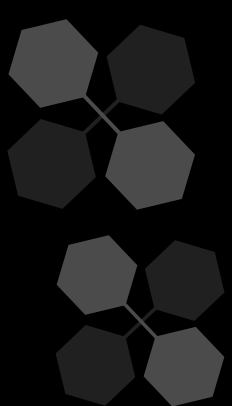


black dog is running through the water



COMPETITIONS

- Winners - Medihack Hackathon @ University of Lodz (Poland)
- 1st and 2nd Place - Sangam, Pragyan @ NIT Trichy
- 3rd Place - Circuitrix, Shaastra @ IIT Madras
- 3 Teams Pre-Finalists - E-Yantra Robotics Competition @ IIT Bombay & MHRD
- Google Kickstart 2021 AIR 4 and Global Rank 27
- Google Hashcode 2021 AIR 8 and Global Rank 97
- Etherpunk '21 Winner (\$4000 in LINK) [Blockchain Hackathon]
- Winner MIT Bitcoin Expo Hackathon (\$2500) [Blockchain Hackathon]
- Won Smart India Hackathon 2020
- ACM-ICPC 2020: One team qualified for Amritapuri & Pune-Gwalior Regionals (Top 50 in India). Another team qualified for Kanpur Regionals.
- Winner, Shaastra Circuit Design Challenge, Shaastra, Techfest, IIT Madras
- 1st and 2nd Place in Daksh, AR/VR Hackathon, SASTRA University, Trichy.
- 1st and 3rd Place, Pragyan Hackathon, Bangalore
- Women Safety Application-Pragyan '21 Hackathon: This Women's safety application recognizes the emotion of its user through their voice/speech, identifies certain keywords in their speech that represent fear or any other negative emotion, and performs necessary actions for the safety of its user. This is achieved by a Machine Learning model that detects the emotions in a particular audio clip.



- **AMIGO - INOUT HACKATHON:** Participated in India's biggest hackathon INOUT 7.0 after a stringent selection process and worked on a student connectivity app aimed at connecting students and implementing other features. The app aimed at anonymity along with connectivity and allowed students to post confessions with pure anonymity.
- **Companion- XPLORE '21 Hackathon:** A web app detects the user's emotion by asking various questions and helps them learn about their emotions and understand them through articles, videos, and biblical phrases, which may help the user to gain peace, and have control over their emotions.
- **Twitemotion - Hackmol 2.0 Hackathon:** Latest Tweets Analysis customized for Query (Hashtags, Username, etc.) searched by User. While the User can visit the Internet and get lost in the huge number of different Opinions Available, the Model gives an Overview of the Situation in terms of Clear Stats and Visual Analysis corresponding to Tweets fetched from Live Recent Data.
- **Bet on Better- InOut 7.0 Hackathon:** A website that facilitates the process of donating materials to needy people around one's neighbourhood. At our interface, a donor is free to donate the stuff he wants to the nearest neighbourhood possible. The charity organization can add or update a request for a donation. There is no restriction on materials a donor can donate. It can be old goods, clothes, food, etc.

CAMPUS DEVELOPMENT

Orientation App

An android app for the freshmen of NIT-T 2020. The app was built on the React Native framework and had an events page, contacts page with the contacts of admin, orientation team and peer supporters, it also bundled in the documents provided by the NITT admin and had an interactive map of the NIT-T campus.

Document Requisition Portal (studentrequest.nitt.edu)

A portal for students of NITT applying for official documents from the college administration requesting any of Bonafide, Transcript, Rank card, Grade card, Course Re-registration, Course De-registration. This automates the process for college admin to deliver documents through Email or Post or both.

Maintenance and Bug Fixes :

Hostel allocation Site

Mess Site

Sportsfete app

OD portal

Sigma Website

(sigma.nitt.edu)

SIGMA - The Business Club of NITT club website. Built for the club, used for giving updates on its projects, events, workshops, guest lectures and competitions. Along with recent updates for all its fields of interest and resources for students to gain an insight on the field.

Spider Main Website (<https://spider.nitt.edu/>) :

Spider site, the club's official website, being renewed with a better UI and some additional pages/features. A members page displaying members from all batches like the previous site, a blog page, where all the medium articles and research papers etc. written by the members will be displayed, a projects page, which will have a short description of all the projects done, and an achievements page, listing all the achievements of the club.

COLLABORATIONS

Happy Hunt project - Startup

React Application built for a Scavenger Hunt game conducted by Event Specials in Pune. The app has 1500+ users who need to solve missions (clues) scattered all over Pune. The admin portal has features like auto evaluation, admin evaluation, adding or updating the missions, feed control, etc. The end-user interface consists of a portal to check clues and submit answers to the clues.

Police CMS App - Trichy City Police

Police CMS App project is a complaint management app for the Trichy Police, to store, edit, search and process complaints in an efficient manner. The application authenticates the user by OTP verification and then provides different services like filing a new petition, sending notifications to the user about new and ongoing petitions. Completed, approval from Trichy police is pending.



EVENTS

Algo Cup:

Flagship Competitive Coding Event that was conducted on CodeChef and was open for all participants across the world. The event saw more than 600 unique participants and more than 2000 unique code submissions and was a great success.

No[wa]mber Contest:

A new Competitive Coding Event conducted for the first time with the purpose of bringing some change for the students in the midst of a pandemic. It was open for all NITT students and saw more than 300 registrations and 100+ unique participants at the end.

MDecoder (March 2021) in association with Pragyan:

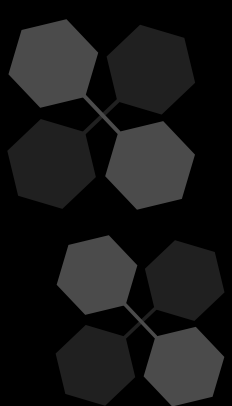
Pragyan event in association with Maximus club of NITT hosted an event for decoding and solving problem-related to mathematics and logic.

Spider Circuit Simulation Contest:

InHOTT is an event conducted by Pragyan and the Technical Council of NIT Trichy exclusively for the First Years of NIT Trichy to showcase their technical knowledge. Every year, Spider conducts an event under InHOTT. In the academic year 2020-21, Spider conducted an event with the name Spider Circuit Simulation Contest (SCSC).

Tasks were based on the field of Embedded Systems and Electronics. Participants were given simple problems statements and asked to design basic circuits with an Arduino Microcontroller. The objective was to give a quick introduction to microcontrollers and electronic circuits.

The event was conducted ONLINE on the TinkerCAD platform.



Spider Week (April-2021)

Set of contests conducted for the first years, for all profiles of Spider (Algos, App Dev, Tronix, Web Dev) , spread across the entire 3rd week of April 2021. Participants were also provided with the resources to learn the concepts a week before the contests were started.

Spider week saw over 400 participants in total. Below are the details of all events conducted under the umbrella of Spider Week :

- Blind coding
- ICY Cup
- The world is your canvas.js
- Web-trivia quiz
- CTF (Capture the Flag)
- Web-Dev workshop
- Code connoisseur
- Clash of Code (IP, ML)
- Spider UNO-verse
- casCADE
- Spidey Sense

Medium Article Series

- Web Wednesdays

A collection of short articles, written by the members of Spider Web Dev, published weekly under the title "Web Wednesdays", covering a wide array of development and programming concepts. Each article contains a detailed explanation of the topic, along with comprehensible code modules (wherever applicable), which enables readers to code along.

- Tronix Thursdays

This Medium article series was a collection of short articles, written by the members of Spider Tronix, published weekly under the title "Tronix Thursdays", covering a wide array of hardware technologies for 1 month. Each article contained a detailed explanation of the topic.

Medium Page:

<https://medium.com/spidernitt>

Vortex Web-Dev workshop:

Spider conducted a workshop during the Vortex Symposium of CSE department on “Basics of Web Development” in January for participants from other institutes to give them an introduction to the world of website development. We focused on the frontend part of the web, teaching them about HTML, CSS and JavaScript. With a limited seating of 100 people, the workshop was a success.

Spider Inductions '20:

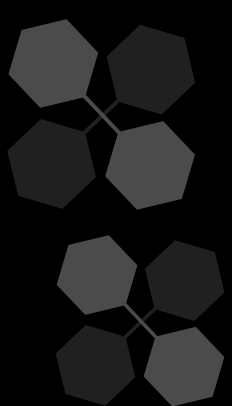
The induction process for Spider R&D for the year 2020-21 was conducted in Aug 2020 in online mode, with Over 400 participants

CircusTrix (March-April 2021)

CircusTrix is an event conducted by Pragyan, NIT Trichy. The event is an open-to-all. Every year, Spider helps the Pragyan Events team in formulating problem statements and evaluating submissions. In the academic year 2020-21, Spider again like the previous year(s) coordinated and helped the events team.

Spider Orientation Program (SOP):

A mentorship program for freshers was conducted in the months of April -May 2020, with over 500 participants.



From the desk of

Kishore.V,
Technical Secretary '20-'21

Rahul.R,
General Secretary '20-'21

