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2023-24

INSTITUTE TECHNICAL SUMMER PROJECT 2023

Words of Appreciation

ITSP 2023

I had the good opportunity to attend the demonstration by second and third-year students who have successfully completed the Institute Technical Summer Project, which was coordinated by ITC, the Institute Technical Council of IIT Bombay.

I must say that it was very useful and very impressive, because I could see young students working with their hands with circuits, physical objects, with magnets and what not creating prototypes, which, with a little bit of effort, can be converted into real-life applications.

I hope they get the energy; they bring the energy to convert it into real-life applications within an outside campus, because our campus is a world in itself and can absorb just about every application.
So students should use this entire campus and whatever is happening here to test their own ideas, make them useful, and get feedback on their projects on a real-time basis. Wishing the current first-year students the very best for their upcoming summer project in a few months.

SANKALP PRATAP
Faculty, Desai Sethi
School of Entrepreneurship
IIT Bombay

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About ITSP

ITSP 2023

Why to do ITSP?

As a first-year student, you must have always dreamt of you building your own machine and wondered if it was feasible. With ITSP, you can build a team and realize your dreams. ITSP is one of the major opportunities from ITC which supports all kinds of ideas and guides teams in achieving it. In the first year of college this stands out as a platform to try out new ideas and innovate from scratch.

It is not domain restricted, thus granting full freedom to explore and come up with new solutions for a pre-existing problem or even take up a new problem statement. All kinds of new ideas are welcomed and with proper mentoring from seniors, one also gets to know the feasibility of the project and its shortcomings.

ITSP begins with a series of brainstorming sessions, talks, technical bootcamps and mentoring sessions which provides essential insights on the problem statement which one chooses to work on. Periodic reviews follow, to track the progress of the projects. Being funded (reimbursed), ITSP is the greatest platform to present your ideas, get it evaluated and actually build it (be it hardware or software).

Who can do ITSP?

Anyone! Any student of IIT Bombay can register for this, form a team and do an ITSP.

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ITSP 2023 Timeline

ITSP 2023

ITSP Orientation
26th March

Brainstorming
31st Mar - 10th Apr

Mentor Allocation
20th April

Review Meet 1
3rd Jun - 5th Jun

ITSP Bootcamp 1
Aeromodelling Club
21st June

ITSP Bootcamp 2
Electronics & Robotics Club
4th July

Review Meet 2
8th Jul - 10th Jul

ITSP Final Expo
12th August

ITSP Closing Ceremony & Prize Distribution
4th October

What to look for?

The following booklet contains a brief description of each ITSP, key takeaways, motivation behind choosing a problem statement and the way team has approached the problem along with the technology used. Some learnings, both technical and non-technical, have been highlighted.

- You may look into ideas of 2023 and may plan to build something on work already done before
- You may observe the entrepreneurial and social development thinking behind the projects
- You may particularly look at project feasibility and how to propose a reasonable timeline for your project

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01 Artifiers

ITSP 2023

Nahush Kolhe, Spandan Anaokar, Agnipratim Nag, Kandarp Solanki

Our journey with VanGoghAI began with the idea of merging generative AI images with abstract art forms, giving birth to our own diffusion model. This model was inspired by the desire to combine the styles of different images, much like the iconic painter Vincent Van Gogh.

VanGoghAI is essentially an artificial intelligence masterpiece. It learns from visual data, primarily paintings and art styles, to create entirely new artworks that mimic the training styles. It employs a combination of ML, image processing, and NNs to achieve this feat using python libraries like PyTorch, Tensorflow.

This has expanded AI art generation, offering tremendous potential in the design industry and the AI/ML community, making it ripe for a successful startup. This has the potential to become more refined and personalized in the future.

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Mentor: Maroof Akhtar, Department of Metallurigical Engineering

02 BOB THE BUILDERS

ITSP 2023

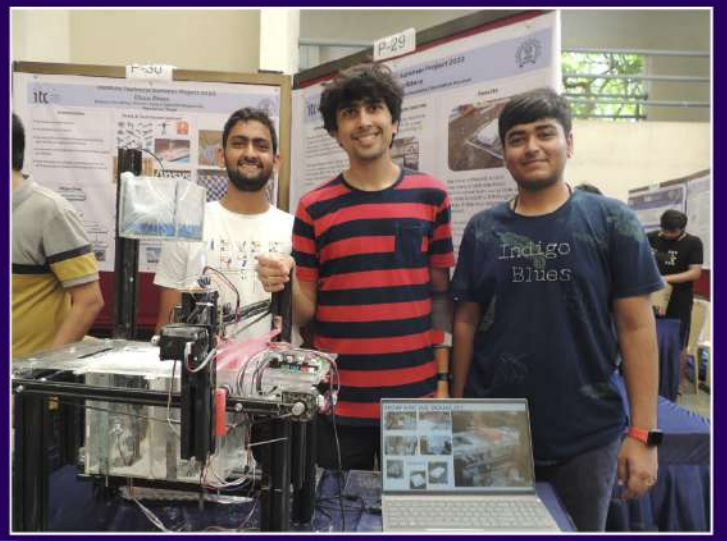
Archit Mundada, Vedant Agarwal, Kshaunish Chandalia

Constructed a binder jetting 3D printer aimed to produce a small cube initially and then progress to print more intricate structures.

We wanted to develop our own modular binder jetting 3D printer using readily available components for cost-effectiveness and efficiency. The goal of our project was to innovate and have a significant impact in the field of additive manufacturing.

Binder jetting is a technique that involves depositing layers of powdered material and selectively applying a liquid binder to bind the particles together. It is known for its speed, scalability, and ability to produce complex geometries.

We have gained hands-on expertise in mechanical assembly, sourcing materials and specialized tools. We have developed proficiency in CAD design, programming, and problem-solving.



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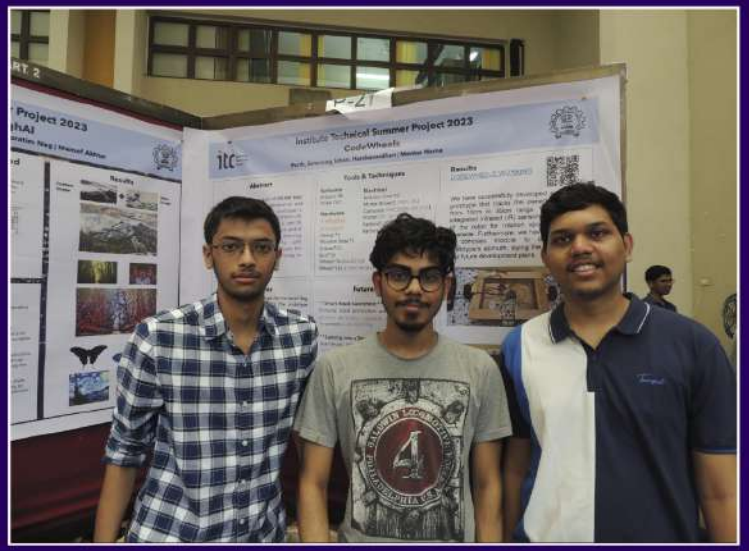
Mentor: Sannidhya Kaushal, Department of Electrical Engineering

03 CODEWHEELS

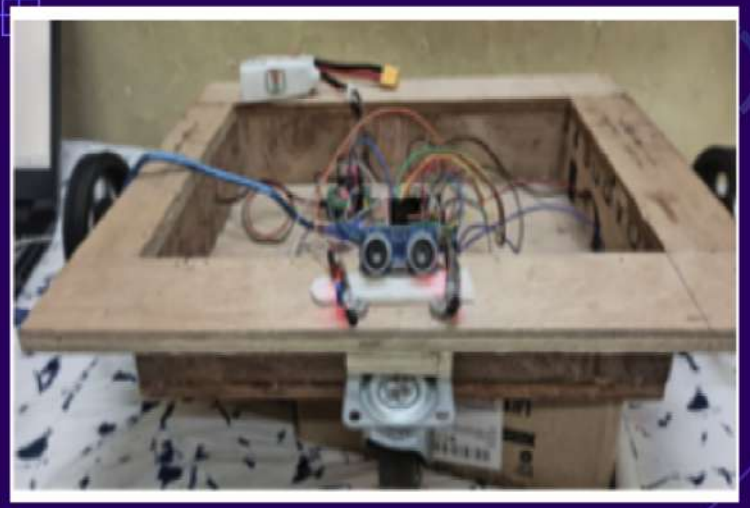
ITSP 2023

Sanuraag Mishra, Ishan Kumar, Parth Sanghavi, Harshavardhan Thorat



We designed a robotic solution to eliminate the need for manual carrying. enhancing the user experience for individuals who regularly carry substantial loads. We recognized the physical strain and inconvenience of manual transportation, particularly for students and professionals with packed schedules.

We had to create a shadow to ensure proper sensor operation during the presentation.Throughout this journey, we acquired valuable technical skills, including connecting components, troubleshooting, and understanding sensor behavior, such as the impact of sunlight on IR sensors



We are proud of what we achieved and excited about the possibilities that robotics and automation hold for solving everyday challenges.

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Mentor: Raushan Kumar, Department of Electrical Engineering

04 Fucus Fly

ITSP 2023

Yogesh Kumar Dangi, Abhay Pratap Singh, Divyansh Jain, Jainam Dosi

The problem statement for our project was to create an electro-mechanical bird that can fly.

Our goal was to combine advanced technology and mechanical engineering to achieve lifelike movements and achieve sustained flight. We aimed to develop a working model that could be used for various purposes, such as entertainment, education, scientific research, and even surveillance.

The inspiration to work on the ornithopter project lies in the desire to emulate nature's beauty, push the boundaries of technology, solve complex problems, unlock new possibilities, and celebrate human creativity.

It's a project that captures the essence of exploration, innovation, and the timeless fascination with flight.

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Mentor: Manas Agrawal, Department of Chemical Engineering

05 Guardians of the Garden

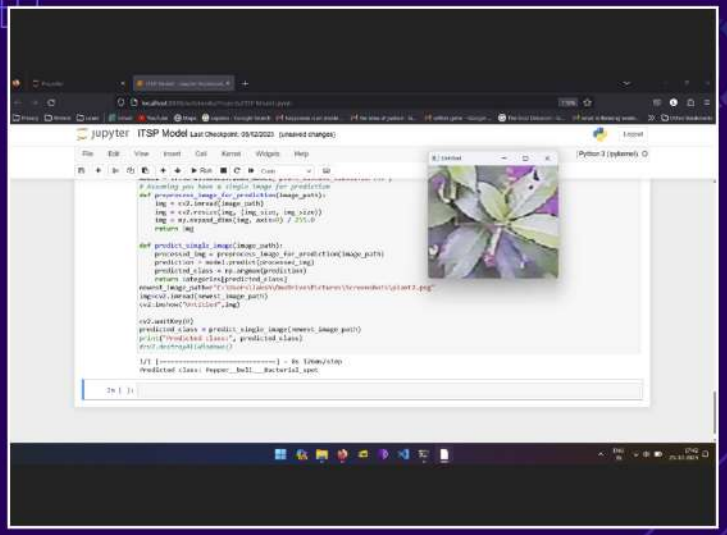
ITSP 2023

Lakshya Gadhwal, Ruchika Jain, Rutuja Choudhari, Rajnikant Semar

Our mission is to create a semi-autonomous agricultural drone that revolutionizes disease detection on large farms. The challenges we face in identifying diseases on vast and diverse agricultural landscapes often lead to delays in responses.

Our Solution the development of drones and ML models to assist extension workers in low-income countries in identifying disease presence on large farms. These drones will be equipped with GPS, camera modules along with our AI model will analyze the collected images using CNNs, classifying crops as either diseased or healthy.

You can manually send the drone to the site and analyse the specified area for diseases. The drone transmits camera footage to the ground station. These images are then analysed by the model, achieving a 98% accuracy rate in disease detection.



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Mentor: Ameya Markarkandy, Department of Aerospace Engineering

06 HOMIE

ITSP 2023

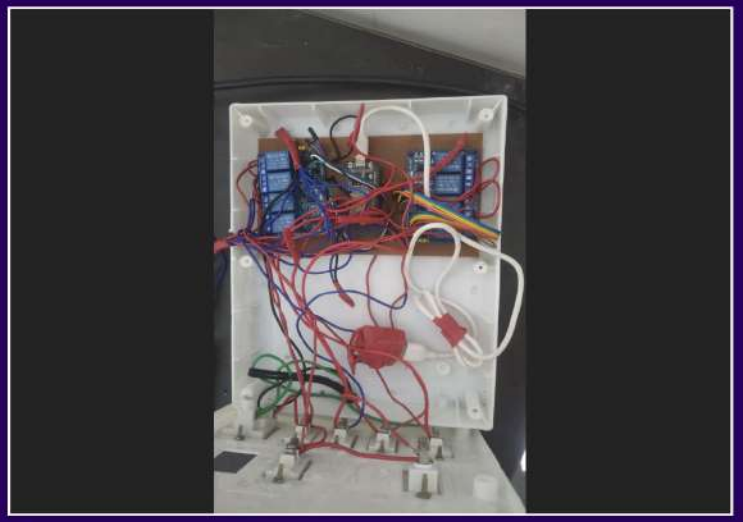
Pranav Tamgadge, Abhinandan Nikhil, Samarth Yadannavar, Sharvari Medhe

We designed an advanced home automation system for hostel rooms to cater to students' dynamic lifestyles.

The challenge was integrating hardware components with the software interface for efficient real-time communication through Google Firebase. By using Raspberry Pi and ESP32 microcontrollers, we aimed to create modern, eco-conscious living spaces with personalized control.

Our ultimate goal was to transform hostel rooms into contemporary, environmentally conscious living spaces that offer personalized control over lighting, climate, and security.

Our project focused on seamlessly blending hardware and software to enhance hostel living.



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Mentor: Anurag Deshpande, Department of Mechanical Engineering

07 CUBE

ITSP 2023

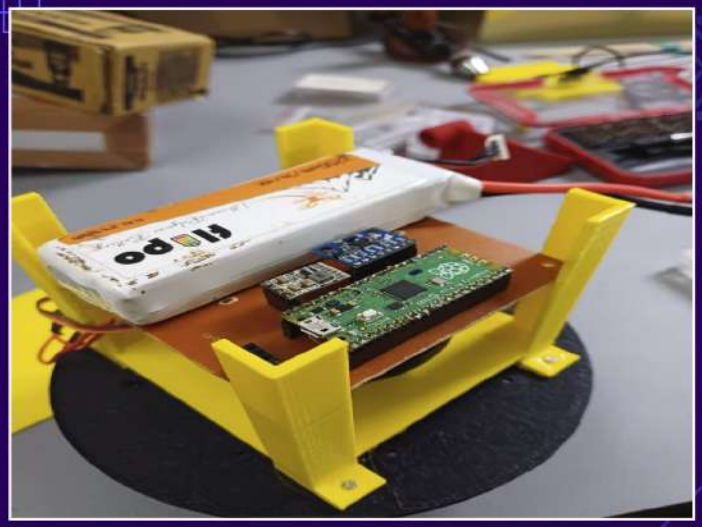
Ameya Marakarkandy, Harsh Pujare, Saukhya Telge, Kudupudi Puja Naga Prasanna

Our project focused on developing a modular reaction wheel system for 3U CubeSats, primarily to gain hands-on experience in control theory and space systems.

We aimed to understand the complexities of implementing control algorithms practically and optimally.

We started with a literature review, defined mass and power budgets, developed control algorithms, and prototyped the system using off-the-shelf components keeping in mind the cost variables in order to acheive our goals for the project optimally.

Flight code was then created, refining control algorithms for accurate attitude control. Additionally, we set up a ground testbenchfor validation and aimed to demonstrate the system's effectiveness for 3-axis attitude control in 3U CubeSats.



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Mentor: Anand Bhaskar, Department of Mechanical Engineering

08 Disco Dinos

ITSP 2023

Krishna chaudhary, Samarth Sanganeria, Sameer Atreya

Our project aimed to reduce the high manufacturing costs of blades for vertical axis wind turbines (VAWTs), which are in demand for applications like airports and railways.

To achieve this, we sought to design blades that simplified manufacturing while maintaining high efficiency.

Our goal was to develop a blade design that would be easy to manufacture while maintaining comparable efficiency to the blades used in airports and railways

We evaluated three blade shapes (elliptical, parabolic, and semicircular) to find the most efficient one through simulations using software like ANSYS Fluent and CFX. Our goal was to make VAWTs more cost-effective and accessible for various applications .

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Mentor: Ripudaman Singh, Department of Aerospace Engineering

09 DRONEacharya

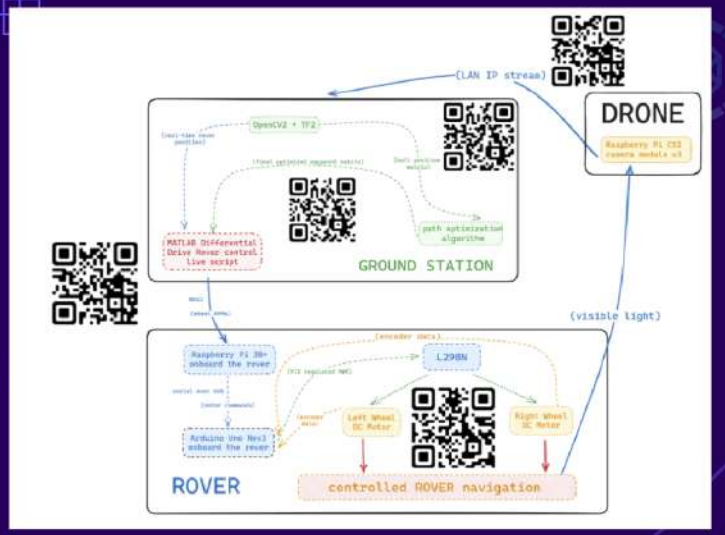
ITSP 2023

Pranav Gupta, Aditya Gaur, Shantanu Edgaonkar, Sarvesh Patil

Our problem statement was to design and implement an intelligent robotics system capable of autonomously collecting balls in a field.

Used several hardware and software componets for our project like controller and ROS2 scripts,TensorFlow-based ball detection, mechanical design, ArUco marker detection and path planning.

We used a Raspberry Pi with a raspicamera, OpenCV2, and TensorFlow for image processing. Our robot employed a Differential Drive Pure Pursuit controller in MATLAB and communicated via ROS2.



Despite facing several challanges throught the project like not being able to implement a gazebo simulation, improper conjuction of Hardware/Software, We were still able to Deliver a succesful Project in the end that we are proud of and worked hard upon.

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Mentor: Gaurav Mishra, Department of Mechanical Engineering

10 Dedsec

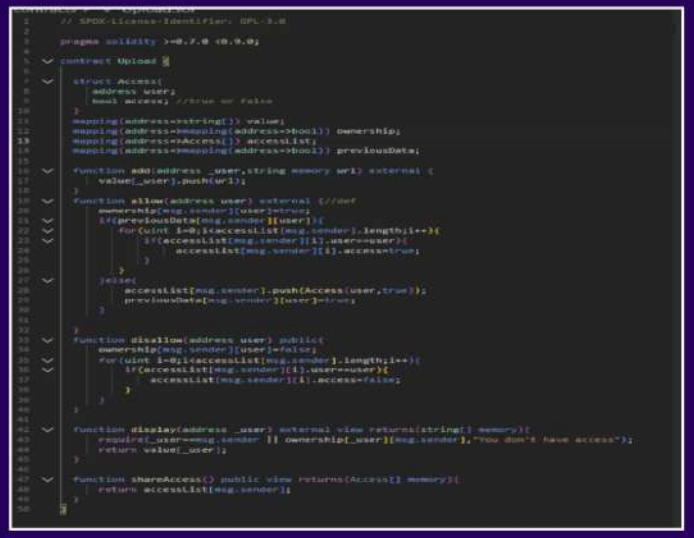
ITSP 2023

Kunal purohit, Abhijeet choudhary, Daksh katkar, Aditya ladhha

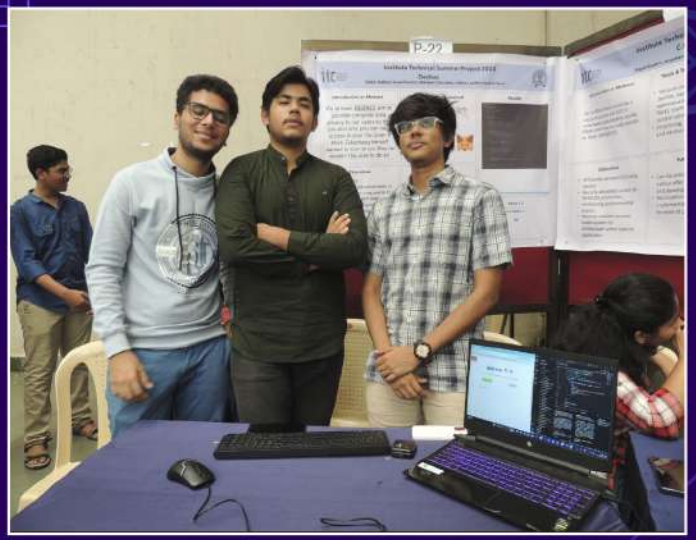
Traditional data storage systems are increasingly vulnerable to hacking,In response to these challenges, we developed a decentralized file storage system for end customers, aiming to create a decentralized counterpart to Google Drive using web3 technologies such as Solidity and IPFS.

We developed the frontend of the application using React.js and implementing the backend with Solidity smart contracts deployed on the Ethereum blockchain. The data stored was uploaded to IPFS (InterPlanetary File System), ensuring a secure and decentralized file storage solution.

We minimized the gas fees on the Ethereum blockchain, recognizing that high fees could hinder user adoptionand usability. We embarked on a steep learning curve, rapidly familiarizing ourselves with ten different technologies.



```
// SPDX-License-Identifier: GPL-3.0

pragma solidity >=0.7.0 <0.9.0;

contract Upload {

    struct Access{
        address user;
        bool access; //true or false
    }
    mapping(address=>string[]) value;
    mapping(address=>mapping(address=>bool)) ownership;
    mapping(address=>Access[]) accessList;
    mapping(address=>mapping(address=>bool)) previousData;

    function add(address _user,string memory url) external {
        value[_user].push(url);
    }
    function allow(address user) external {//def
        ownership[msg.sender][user]=true;
        if(previousData[msg.sender][user]){
            for(uint i=0;i<accessList[msg.sender].length;i++){
                if(accessList[msg.sender][i].user==user){
                    accessList[msg.sender][i].access=true;
                }
            }
        }else{
            accessList[msg.sender].push(Access(user,true));
            previousData[msg.sender][user]=true;
        }

    }
    function disallow(address user) public{
        ownership[msg.sender][user]=false;
        for(uint i=0;i<accessList[msg.sender].length;i++){
            if(accessList[msg.sender][i].user==user){
                accessList[msg.sender][i].access=false;
            }
        }

    }

    function display(address _user) external view returns(string[] memory){
        require(_user==msg.sender || ownership[_user][msg.sender],"You don't have access");
        return value[_user];
    }

    function shareAccess() public view returns(Access[] memory){
        return accessList[msg.sender];
    }
}
```



Mentor: Kartik Sood, Department of Mechanical Engineering

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11 AutoMow

ITSP 2023

Goushik L, Samarth Payghan, N.V. Navaneet, Aashish Chandra

We aimed to develop a bot that could efficiently mow the lawn with no human intervention. However, we recognized that there was still room for improvement in various aspects such as technology, software, electronics, and mechanical components.

We aimed to enhance the bot's motion while cutting the grass, making it more efficient and effective. Looking towards the future, our team has aspirations to make the autonomous lawnmower bot more commercially viable and accessible to a wider audience.

Our project aimed to address the problem of reducing effort in lawn maintenance by developing an autonomous lawnmower bot. Through continuous improvement and innovation, we strived to create a bot that could revolutionize the way grass is cut, making it easier and more convenient for users.

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Mentor: Saksham Katiyar, Department of Mechanical Engineering

12 TechCare Titans

ITSP 2023

Aarohi Deshpande, Manisha Sahu, Kanak Dudi, Saima Faiyaz Patharwat

The problem statement for our project was to design a wheelchair tilt communicator system that could operate the wheelchair of a handicapped person with the help of head movements, making the operation hands-free.

Created a solution for people affected by quadriplegia, who are paralyzed in all four limbs. Existing solutions in the market, such as manually controlled wheelchairs, electric wheelchairs, and brain-controlled wheelchairs, either did not serve the purpose for quadriplegic patients or were not reliable enough.

Our proposed solution was novel and undeveloped in society, and we believed it would be highly reliable and economical compared to existing options in the market.

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Mentor: Kartik UC, Department of Electrical Engineering

13 Chible

ITSP 2023

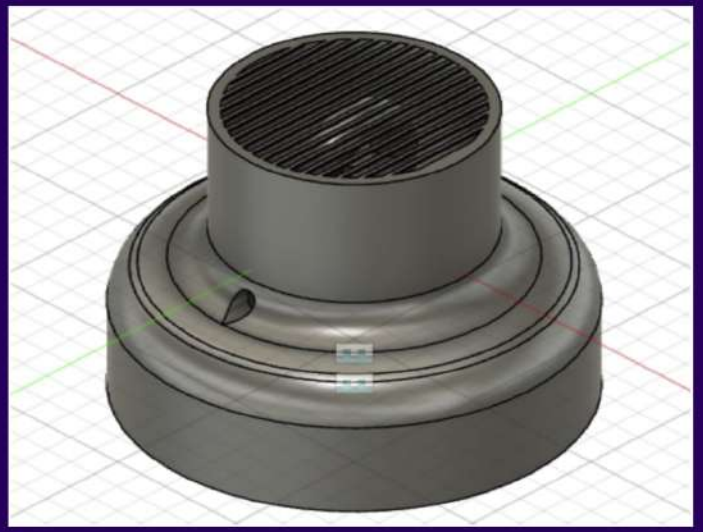
Aryaman Pillai, Shailesh Sharma, Chaitainya Jagtap

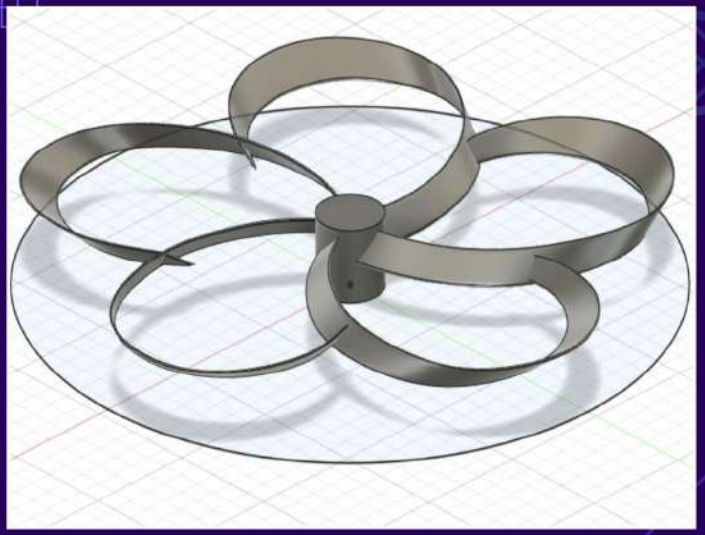
Our problem statement is to address the issue of smoke and pollution generated while cooking in households without proper ventilation systems or chimneys.

Objective is to create a cost-effective and easily installable alternative to traditional chimneys. We want to make the Chible portable, easy to disassemble and user-friendly.

We did in-depth research on the air refinement process and designed a model of the device's structure. Simultaneously, we ordered the required parts for the Chible.

Gained experience in using software like Ansys and Fusion 360 for visualization and design purposes. Simulated various smoke simulations and used our product to test our solutions to it and gained valuable insights along the way.





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Mentor: Dheeraj Shakya, Department of Electrical Engineering

Tech Trishul

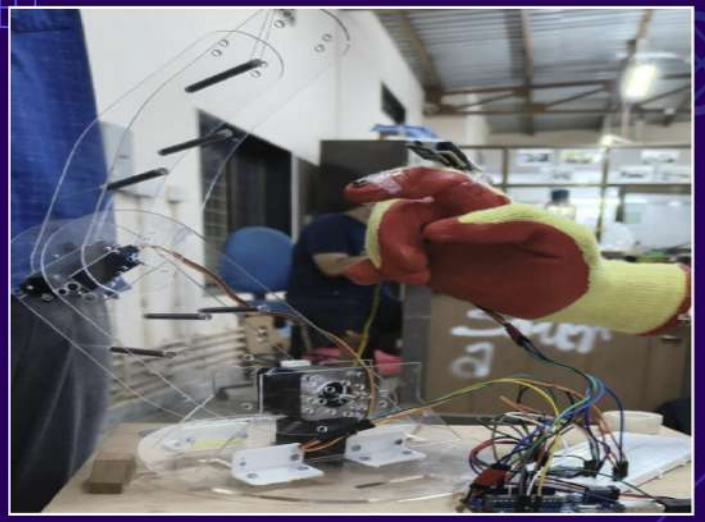
Aditya Sisodiya, Satyam Gupta, Arkadeep Saha

Our team is committed to developing a gesture-controlled assistive arm system that empowers individuals with muscular dystrophy to regain independence in their daily lives.

By leveraging minimal finger movements, we aim to create a prosthetic arm that accurately translates these gestures into arm and leg motions.

Using sensors like the APDS9960 gesture sensor and linear hall effect sensors, we will measure and map finger movements to rotations of servos and a stepper motor within the robotic arm.

Our objective is to significantly improve the quality of life for those affected by muscular dystrophy by providing them with a tool for enhanced mobility and increased control over their movements and making their overall life more happier.



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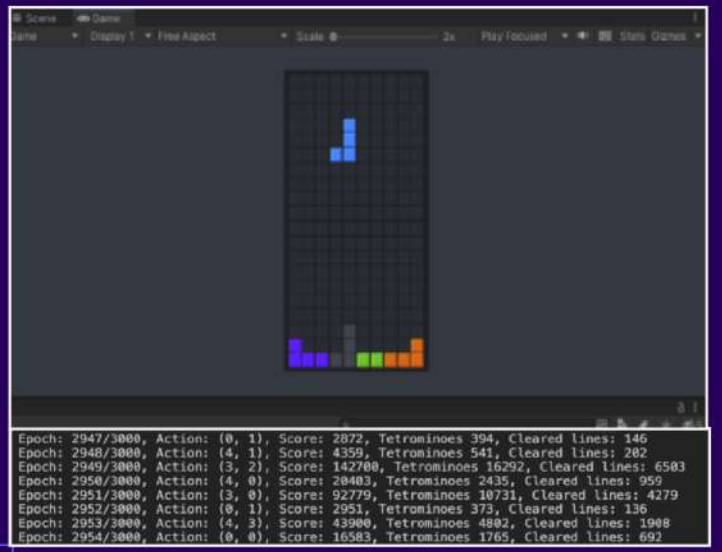
Mentor: Ishaan Manhar, Department of Electrical Engineering

15 VANT

ITSP 2023

Tarus Pande

In our project, we've delved into the fascinating world of applying reinforcement learning techniques to optimize gameplay in Tetris. Our primary objective has been to enable a reinforcement model to autonomously learn the strategic intricacies of block placement, ultimately aiming for the highest possible scores in the game.



For those interested in tinkering with the model's hyperparameters, we've made it easy. You can make adjustments directly in the 'deep_q_network.py' file, giving you the flexibility to fine-tune the model to your liking.

When it comes to testing any of the trained models, it's a straightforward process. In the 'test.py' file, simply assign the desired model's name to the 'MODEL' variable. Running the script will provide you with insightful results, showcasing how well the model performs in optimizing Tetris gameplay.

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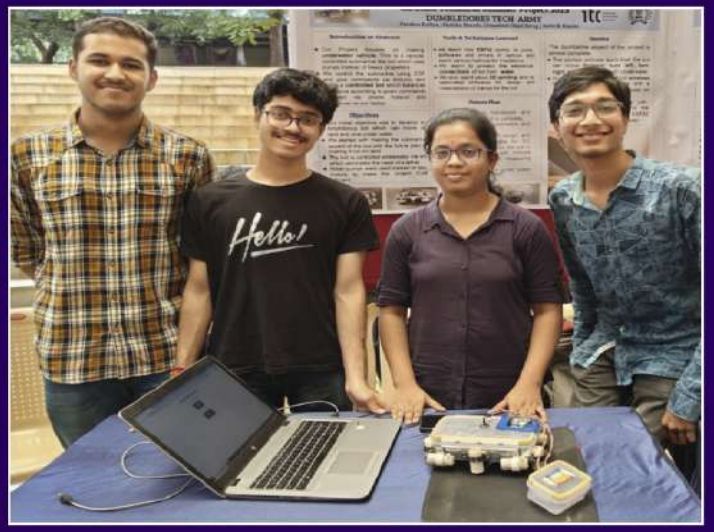
Mentor: Shantanu Welling , Department of Computer Science and Engineering

16 DUMBLEDORE'S TECH ARMY

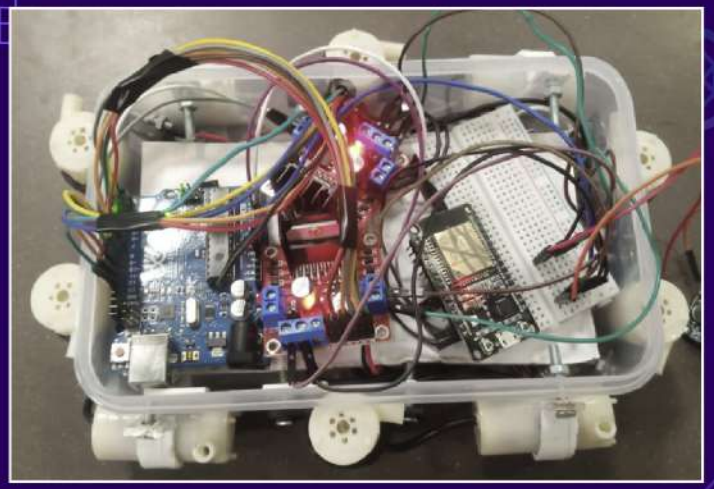
ITSP 2023

Parshva Roliya, Akshita Bharde, Debashish Das, Chirag Sharma



Our project focused on developing a proof of concept (POC) for an underwater car, primarily designed as a remote-controlled submarine for gathering marine sensor data.

To achieve this, we employed an Arduino board for control and an ESP-32 for wireless communication, enabling remote operation via a web server interface.



Challenges arose during the project, such as issues with PWM control, which we successfully resolved with mentor guidance.

Through the incorporation of 3D printing technology for component design, waterproofing measures, and a strong emphasis on teamwork, we successfully created an affordable and functional POC for an underwater car.

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Mentor: Sathvik Kanna, Department of Electrical Engineering

17 Svano Robotics

ITSP 2023

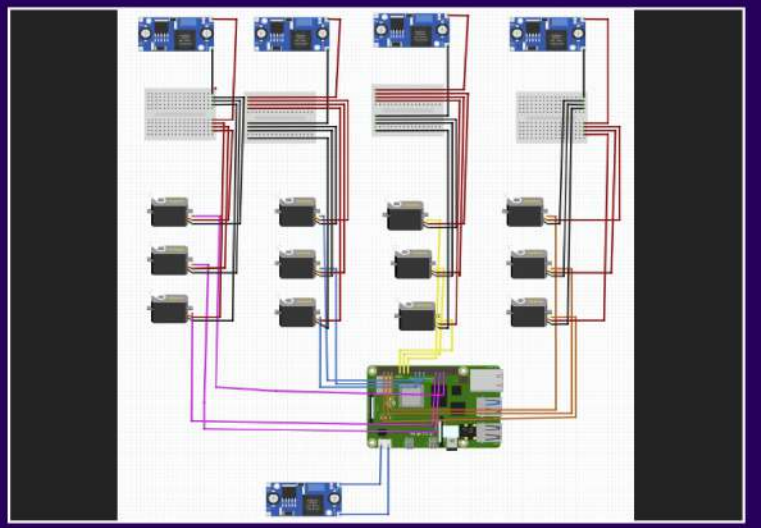
Tek Singh, Pritesh Dhakate, Anshul Singh

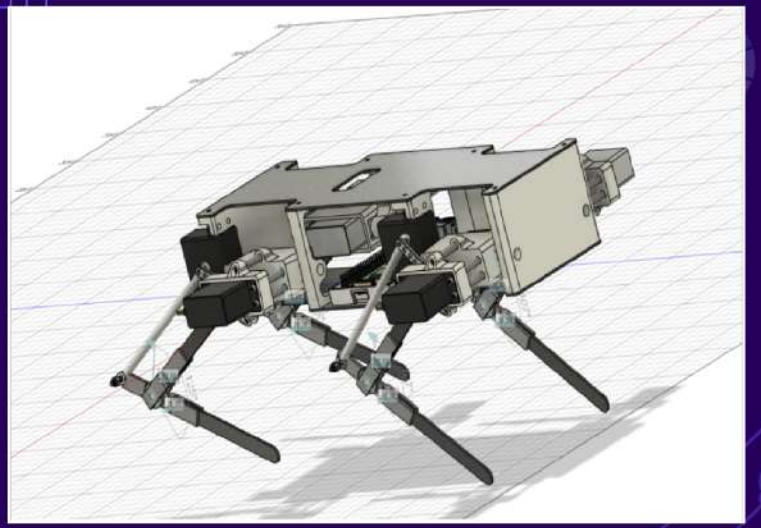
Our project is inspired by the MIT cheetah project, and it revolves around creating a robotic dog with a range of exciting features, including gesture control, image recognition, voice recognition, obstacle avoidance, and even 3D mapping capabilities.

To power this endeavor, we opted for the Raspberry Pi 4B, equipped with 8GB of RAM, as lower RAM models were in short supply across various platforms.

Our 3D printing files are ready, and the motion code is in good shape. Our next steps involve diving into image recognition and voice recognition, which present some challenges.

Given the scope and complexity of integrating all these features, we acknowledge that it's quite a formidable challenge. Nevertheless, we're forging ahead with determination.





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Mentor: Viraj K. Patel, Department of Aerospace Engineering

18 iKshana

ITSP 2023

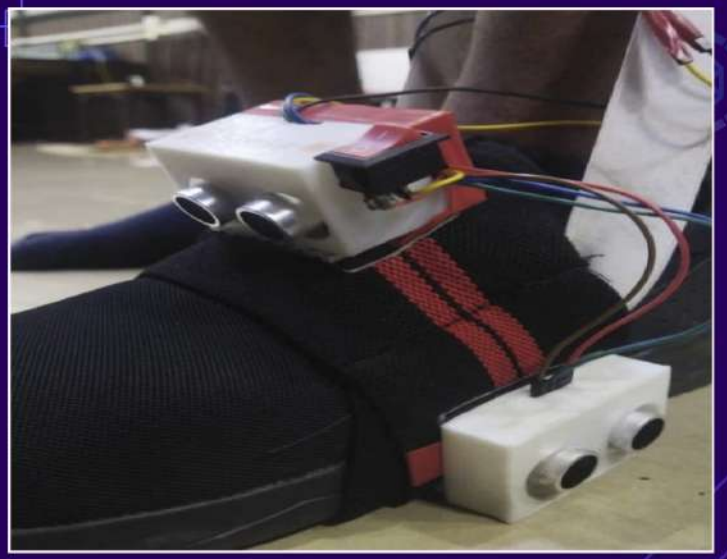
Abhineet Agarwal, Chinmay Moorjani, Tanish Raghute, Yash Bhake

Our project, iKshana, aimed to empower visually impaired individuals to navigate indoors and outdoors discreetly and independently.

We sought to overcome existing limitations like the need for extra accessories and high costs. Our solution involved an elastic harness that could be worn with any footwear, integrating both short-range object detection through ultrasonic sensors and long-range navigation with GPS technology.

We provided haptic feedback for guidance and developed an Android app for location data processing.

Ultimately, our goal was to create an affordable, accessible, and unobtrusive navigation solution, enhancing the self-sufficiency and self-confidence of visually impaired individuals.



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Mentor: Ojas Jain, Department of Mechanical Engineering

19 MagTech

ITSP 2023

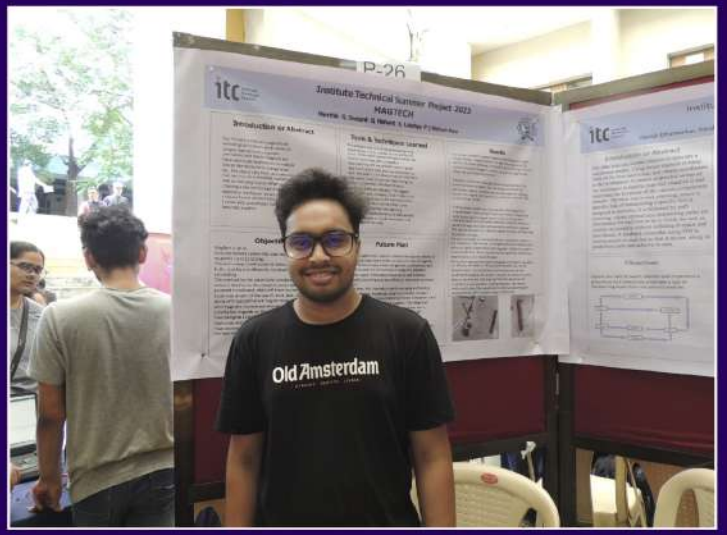
Nishant Bhave, Swapnil Banthia, Karrthik Radhakrishnan, Lakshya Prakash

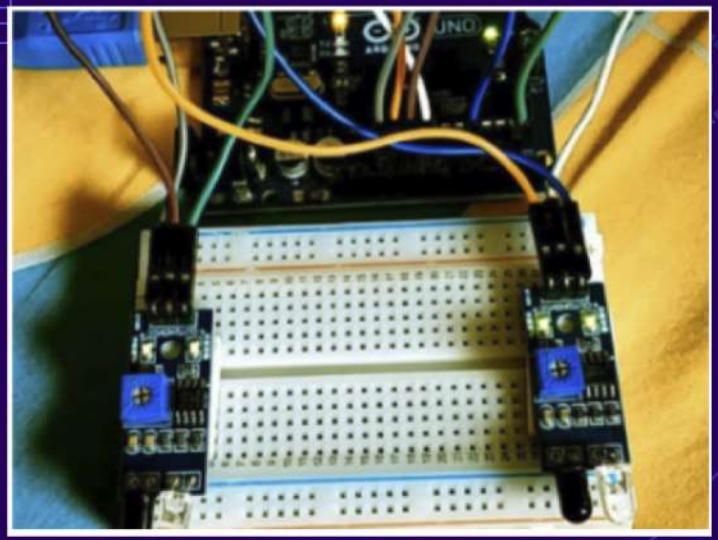
Our problem statement was to create a magnetically levitating cart system that could be used in various settings like restaurants and storage areas.

We built a maglev track and successfully lifted our bot using a stand groove, a circuit to control the electromagnet's polarity via H-bridge motor driver, integrated a magnetometer to detect magnetic field orientation to adjust current flow accordingly.

Additionally, we developed a mathematical formula for speed detection using LED sensors on the track with alternating polarity neodymium magnets.

We faced several setbacks like magnets not being strong enough, engineering issues and others but we gained valuable lessons and we belive all of this contributes to our growth as engineers.





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Mentor: Rishab Rao, Department of Electrical Engineering

20 TBD

ITSP 2023

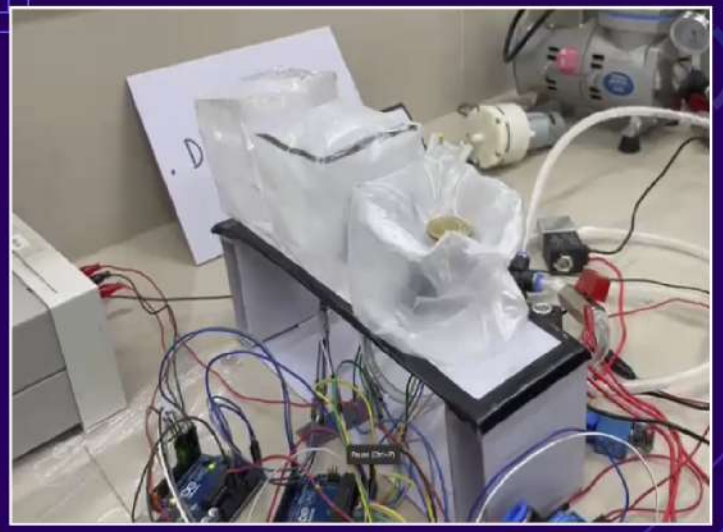
Vedant, Ashwin, Rishika, Meetu

Our mission aimed to alleviate the challenges faced by patients enduring extended bed rest, primarily the painful development of pressure sores.

This innovative bed employs microcontroller-controlled air pumps beneath the mattress, which continuously adapt the pressure to ensure even distribution across the body.

We developed and experimented with various pressure sensors and smart fabrics in prototypes to ensure accurate pressure monitoring and patient comfort.

Although we encountered challenges like sensor calibration and I2C communication, our collaborative efforts and perseverance led to the successful creation of a miniature mattress with real-time pressure sensors.



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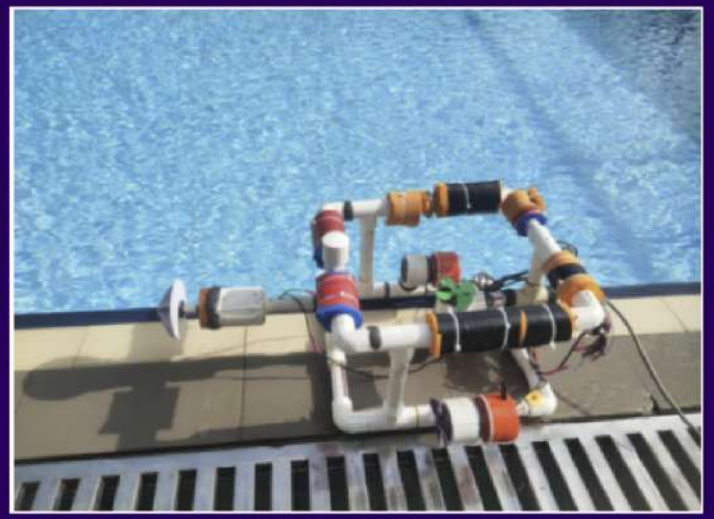
Mentor: Anurag Deshpande, Department of Mechanical Engineering

21 Incognito

ITSP 2023

Amna Rahman, Leena Jagwani, Ayakshma Sharma, Aditya Shrugharpure

It was during our research journey that we stumbled upon the grave issue of manual scavenging in sewage pipes, a problem responsible for numerous tragic deaths. Learning about these dire circumstances ignited a strong sense of purpose and propelled us to take action. We also had ambitious plans to enhance its functionality by incorporating features like sonar and GPS for more sophisticated navigation.



We employed waterproof motors from bilge pumps, designed a specialized drill bit capable of navigating sludge while mitigating Torque, and aimed to revolutionize sanitation work in India.

Incorporated drilling approach, but limited access to 3D printing resources led us to a creative solution – crafting our drill bit from styrene sheets. This marked a turning point in our project, as we successfully constructed our underwater drilling ROV.

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Mentor: Mayank Bajaj, Department of Aerospace Engineering

22 Tech Titans

ITSP 2023

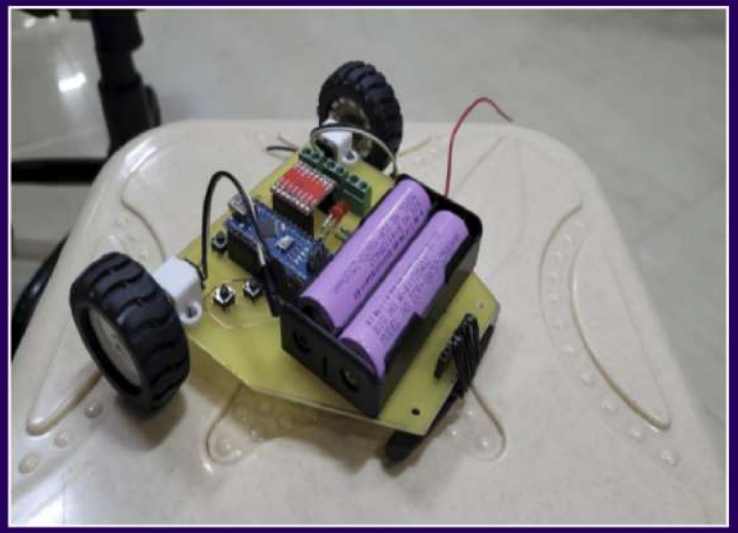
Khushi Gondane, Aditya Anand, Prajapati Kishan Kanaiyalal, Shounak Das

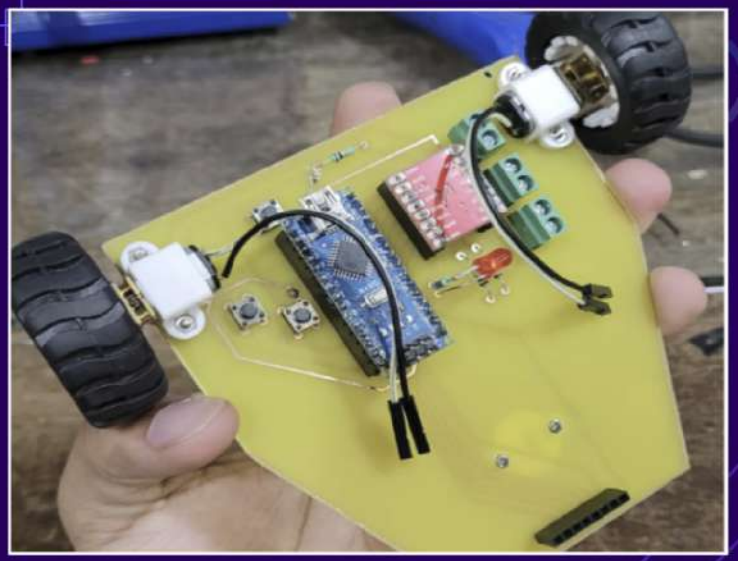
Created an engaging line-following bot game with two distinct phases: the "Dry Run" and the "Actual Run."

We designed a lightweight PCB to serve as the bot's chassis. We carefully selected components like the Arduino Nano, TB6612FNG Motor driver, Metal Geared Micro Motors, and a two-cell 18650 battery for the lightweight circuit. The bot was programmed to follow the line using the LSR algorithm.

We encountered challenges, from bot length issues during turns to aligning it along the path. We also addressed path shortening due to battery drain with the inclusion of a boost converter.

This project was both a technical learning experience and an enjoyable endeavor as we overcame challenges to create an engaging line-following bot game.





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Mentor: Ajinkya Satishkumar Patil , Department of Aerospace Engineering

23 The Four Horsemen

ITSP 2023

Apurv Keer, Atharv Tambade, Vishal Kumar, Mridul Goel, Atharva Deshpande

Our project aimed to automate a Dobsonian telescope for affordable and user-friendly astrophotography.

We modified a Sky-Watcher 10" Dobsonian telescope with DC motors for precision and control. Using 3D-printed gears, we designed an application that calculated necessary telescope adjustments based on the user's input.

This information was then sent to an Arduino board to control the stepper motors. Despite challenges in gear design and testing, our project enhanced our skills in design, 3D printing, Arduino programming, mechanical assembly, and electrical circuit design.

In the end, we successfully automated the telescope, simplifying celestial object observation for amateur astronomers and astrophotography.

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Mentor: Kaivaly Daga, Department of Mechanical Engineering

24 RoboCivs

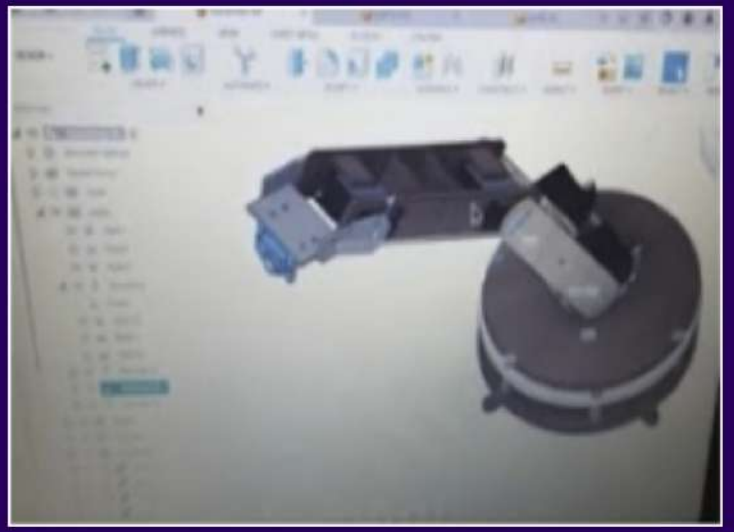
ITSP 2023

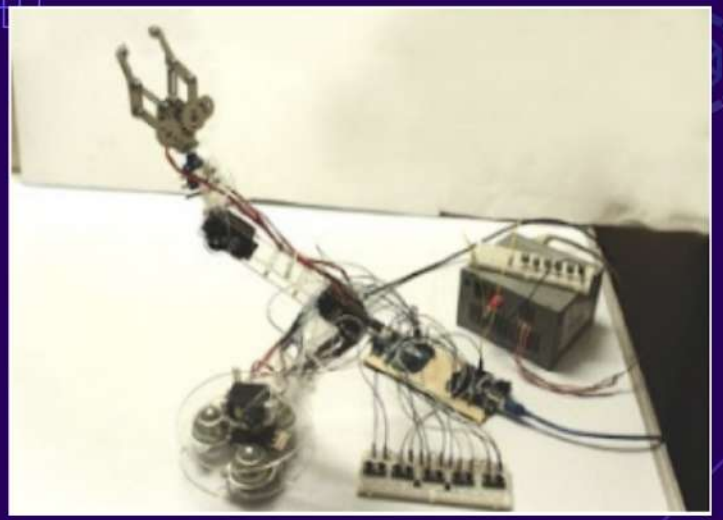
Hrithik Mhatre, Mahek Maheshwari, Arya Mishra, Piyush Raj

Created a programmable robotic arm capable of performing specific movements, with the ultimate goal of enabling control via a mobile phone.

We initiated the project by researching and procuring the necessary hardware components essential for its successful execution. Additionally, we delved into the intricacies of Inverse Kinematics to gain a better understanding of the programming aspect.

Once completed, this robotic arm holds promise for various applications, including tasks like pick and place operations in manufacturing and packaging.





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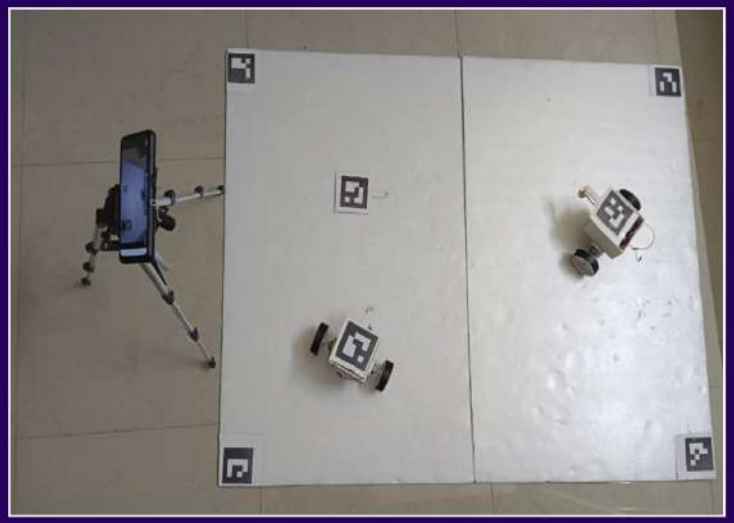
Mentor: Vraj K. Patel, Department of Aerospace Engineering

25 Tech Minds

ITSP 2023

Hanish Dhanwalkar, Tanmay Ganguli, Vighnesh Nayak, Harsh Kavediya

Our project delved into the exciting world of swarm robotics, where we aimed to simulate a warehouse scenario using a group of microcontroller bots. The idea was to coordinate these bots to collectively transport boxes from one location to another, all the while optimizing their paths to minimize time and avoid collisions.



Employed Aruco markers to track the bots and boxes, allowing us to determine their precise positions within the workspace. A suspended camera above the workspace mapped and visualized the area, providing essential data for our project.

We implemented complex path and task planning algorithms, detected Aruco markers for localization, and established a common centralized WiFi connection for the bots. Tuning the PID parameters for real-world path matching was another crucial accomplishment.

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Mentor: Vaibhav Upadhay, Department of Aerospace Engineering

26 C. Cap

ITSP 2023

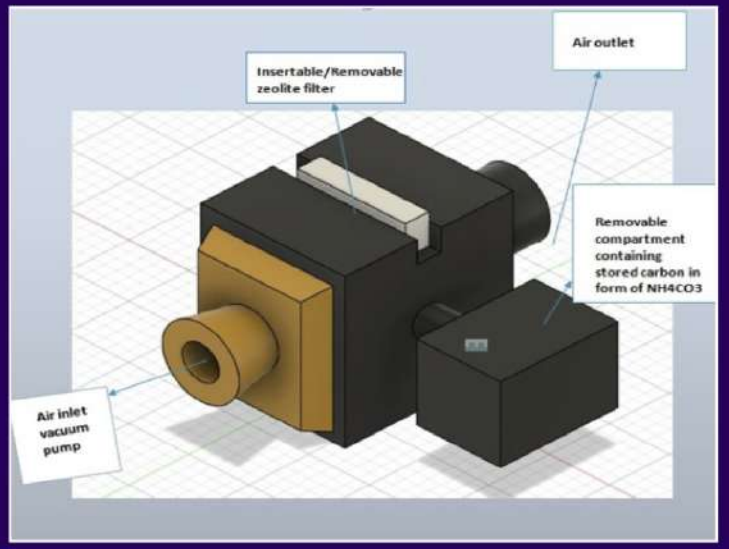
Prapti Kadam, Aryaman Pillai, Anika Jain, Aditi Ghande

Our mission was to provide a model for the efficient capture of carbon dioxide directly from the atmosphere, employing a technique known as Direct Air Capture (D.A.C).

Leveraging the CO2 adsorption capabilities of zeolites, allowing for the effective removal of carbon dioxide from the air. What sets our system apart is its sustainable design, which recycles the captured carbon for the production of ammonium carbonate (NH4CO3), thereby minimizing its environmental impact.

Additionally, we have developed a scalable vacuum-based system, paving the way for the widespread application of our innovative carbon capture technology.

We gained several key skills thorughout the journey like researsh analysis, team work, product affordiblity and faliure mitigation.



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Mentor: Aryan Gupta, Department of Chemistry Sciences

ITSP BOOTCAMP

ITSP 2023

Drone Sizing, eCalc & Flight Controllers

Aeromodelling Club

The Aeromodelling Club conducted "Unlocking the Skies!" session on fundamentals of drone sizing and flight controllers. The session covered aspects of drone sizing and eCalc tools followed by a segment from Aman Malekar (Institute Aeromodelling Secretary 2020–21) covering the technicalities of the Pixhawk Flight Controller. The session helped ITSP teams with ideas in domain of Aerial Robotics.

ER101: IoT and Mechatronics

Electronics and Robotics Club

The Electronocs and Robotics Club conducted ER101 session to propel understanding of Robotics. Great insights were given by Tejal Barnwal on Mechatronics, including a brief discussion on microcontrollers such as Arduino and Raspberry Pi followed by a segment by Kalind Karia on Internet of Things (IoT). The session helped ITSP teams with ideas in domain of mechatronics and IoT.

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ITSP EXPO

ITSP 2023

Tech Trishul

Tech Minds

Team Fucus Fly

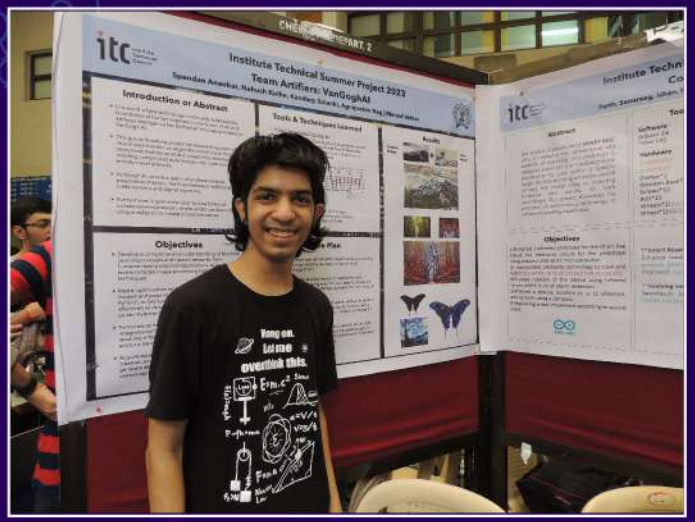
Techcare Titans

CodeWheels

Bob the Builders *(Kshaunish)*

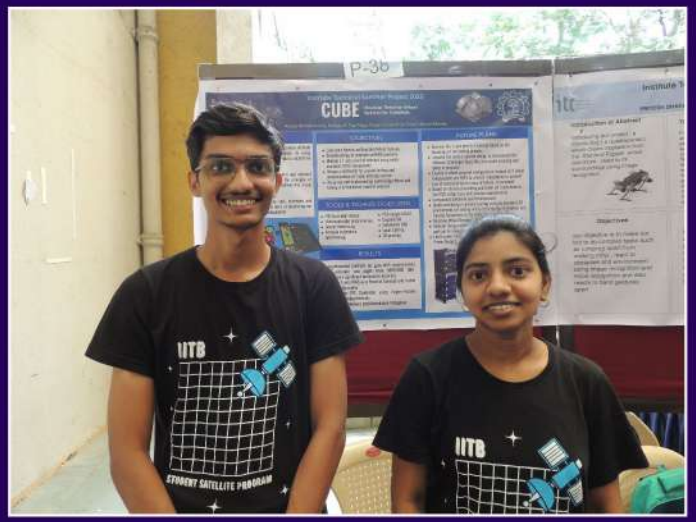
Poster Presentation

ITSP 2023



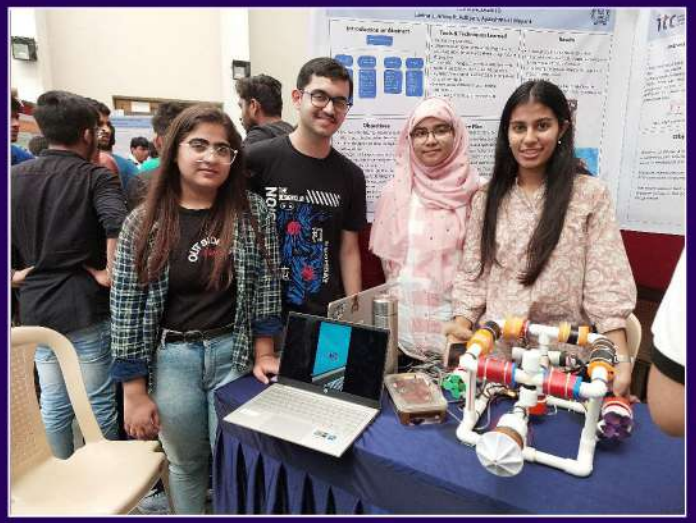
Artifiers (Nahush)

Svano Robotics (Pritesh)



Cube (Saukhya & Puja)

DRONEacharya



Team Incognito

Team TBD

VOTE OF THANKS

ITSP 2023

We want to express our gratitude to all the teams who took part in ITSP 2023 across all of its stages. You have been extremely encouraging and have occasionally assisted us in growing by providing us with your helpful criticism. We want to express our gratitude to all the students who offered to mentor projects and take part in the project review. Tinkerers' Lab served as the focal point for ITSP teams. The lab technicians Vinayak Shellar, Ajinkya Kadam, and Rohit Chile deserve our appreciation.

We would like to extend our gratitude to Dean of Student Affairs - Prof. Suryanarayana Doolla, Associate Dean of Student Affairs - Prof. Atul Srivastava, and Chairman Technical Prof. Rajkumar Pant, the Dean (SA) office, SAC Office and Accounts section for their unending support to this endeavour.

PRATHMESH SHIMPI
General Secretary Technical Affairs
Institute Technical Council, IITB
2023-24

REMARKS

Over the years, ITSP has evolved. From its humble beginning, growing over the years, it has grown into a major activity for ITC. This document has 25+ projects which were completed in summer 2023. We are confident that this booklet shall serve as a guide to upcoming teams to come up with more innovative projects and generate more in terms of the overall value beyond their own learning.

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CORE TEAM 2023

ITSP 2023

AKSHAT VERMA
Project & Tech Team Nominee

BITTHAL PARIDA
Project & Tech Team Nominee

Divyanshu Rathore
Manager, Energy Club

Hardi Desai
Manager, Energy Club

Hemant Meena
Manager, Aeromodelling Club

Manas Agrawal
Manager, Aeromodelling Club

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EDITORIAL TEAM

ITSP 2023

Sarthak Mishra
Convener, ITC Design Team

Hemant Meena
Manager, Aeromodelling Club

Manas Agrawal
Manager, Aeromodelling Club

Om Soni
Convener, Aeromodelling Club

ITSP 2023 Mentors

Mentors play a significant role in the success of ITSP every year. This year too, we've had a plethora of amazing people working with various teams and assisting them with everything they needed.
The Institute Technical Council acknowledges, with deep gratitude, the tireless efforts of all mentors, for being easily available to all participants for solving their problems, answering their questions and continously providing thorough guidance.

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