

Engineering Product Innovation Center (EPIC)

1. **Title of the practice:** Engineering Product Innovation Center (EPIC)

2. **Objectives of the practice:**

- Create culture of project based learning
- Projects built by students enhances the skills of students and makes them more employable
- Develops a culture of innovation

3. **The Context**

The Awareness of EPIC is to enable students to conceptualize their projects.

EPIC is envisioned to be an eco-system that incubates required Lab Facility for all projects, dedicated mentoring, online and in person mentoring. The fundamental to design this system was to make sure Students learn and work, by means of rectification recapitulations with mentors, completes the desired tasks of the project. EPIC attached in Industry Collaborations to make this process in Hybrid Mode (Online and Offline) and more feasible to students.


“Learning” was an important factor hence relevant courses were given access and relevant in person “Mentor Sessions” were designed for the project Teams.

4. **The Practice**

EPIC Operation was alienated in Cycles spread over 03 Cycles starting from 6th Semester. The first cycle was focused on “Project Selection” and designating Learning Tasks to the Project Teams. The Project list is provided by industry mentors and categorized according to qualification level. Industry Mentors suggested to bifurcate and allow only teams that have certain level of Technical Aptitude to choose difficult project. Hence all teams need to appear in the Technical Aptitude test to qualify for the project. Once The Project selection window is open, Teams with marks above threshold can select the difficult project and all others are open to select moderate and simple level of difficulty.

The Second Cycle begins quickly once the Project Selection is concluded. All teams are assigned the Learning Material and assignments to be submitted. This cycle continues with start of 7th Semester and first Project Day is marked with In Person Industry Mentor meeting with Students, Guide and Project Coordinator. This Meeting outcome is “Tasks List” for complete project. We made use of a portal for project management and




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communication with students, Guide and Industry Mentors. Each Team need to submit the response to given task on given certain deadlines. A Communication thread is opened to each task that makes Mentor to advice, Coordinator to monitor the progress. Once the Industry Mentor is satisfied with work done in the task, Mentor marks it as resolved. Once all the tasks are completed, Project is considered to be completed. A final Project video is submitted at the end of the project.

Along with Final Year Projects, EPIC is open for all the teams working on Innovative projects and participating in National and International Level competitions. The EPIC facility is open for all such competitions 24x7. Each Team is funded once they reach on quarter finals or Semi Final level.

5. Evidence of Success

Team "e-Netra" won 5 Lac INR as Product Development Fund from DST & Texas Instruments Innovation Challenge 2017. E Netra formed a start up and fund was utilized to make Industry grade product. Promising prototypes of "Prosthetic Arm", Table Tennis training Robot, Epilepsy Seizure Detection System and Knee Assist Device are in process of converting into Industry level product.

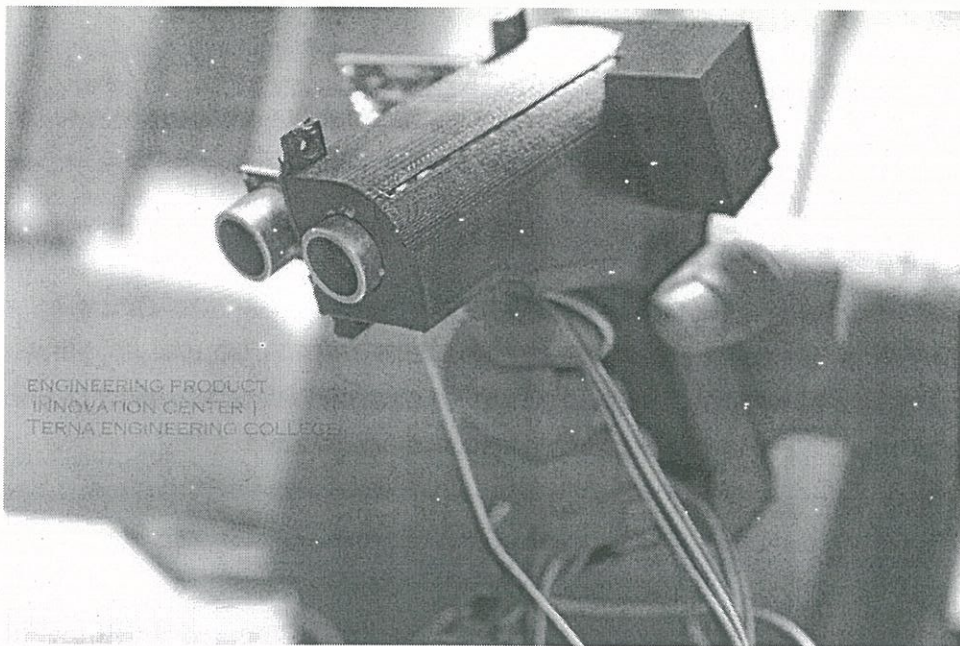


Fig. Knee Assist Device




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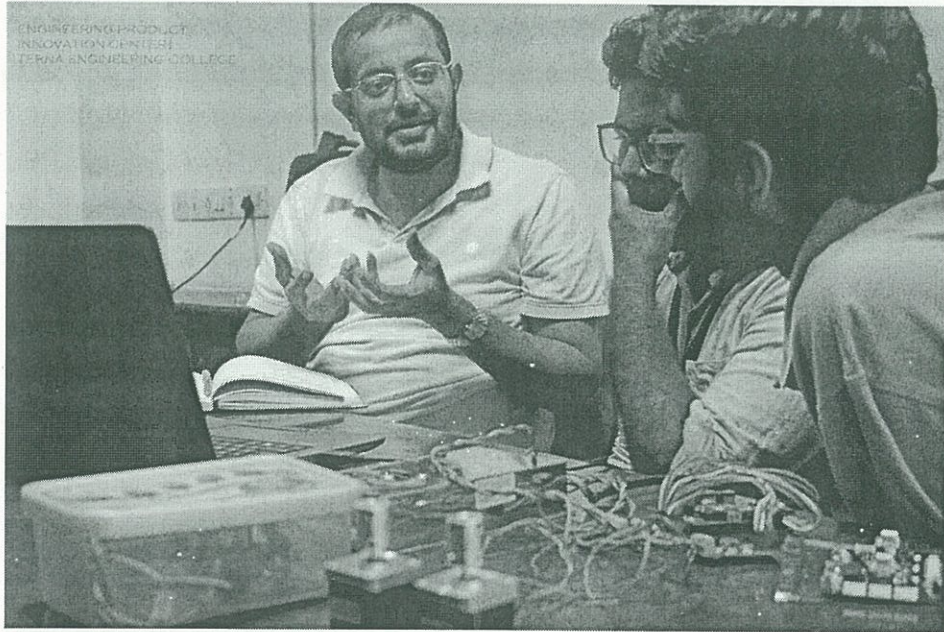


Fig. Mentor, Mr. Zain A (IIT Kharagpur) in interaction Session with Project Teams

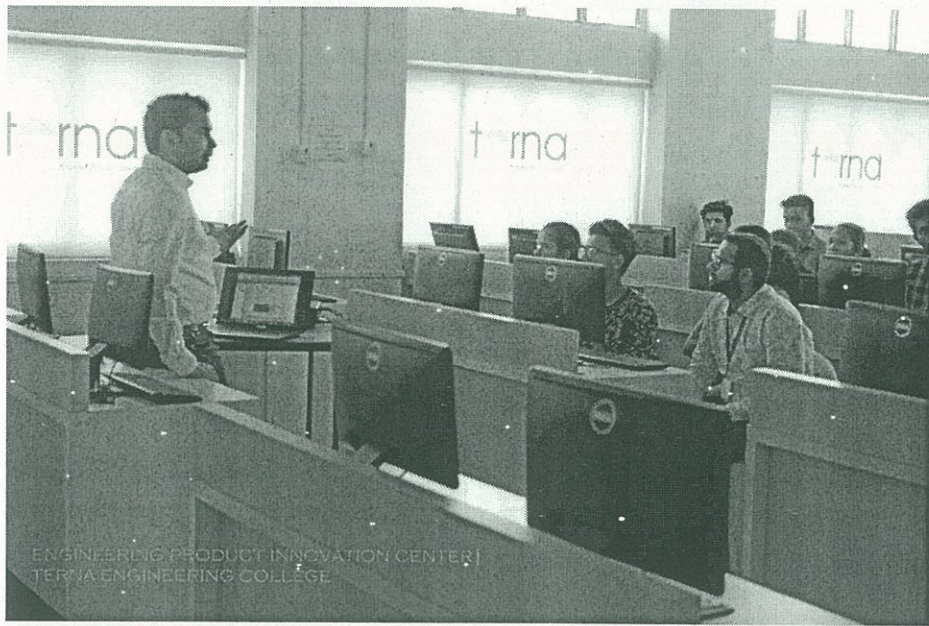


Fig. Mentor, Mr. Pranay Kishore (IIT Kharagpur) conducting Learning Session with Project Teams




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Fig. "e-Netra" Project Prototype

6. Problems encountered and resources required

Time to time, We were required to procure special hardware's in specific projects as requested by Mentors. Few hardware's were expensive and available only at Intrnational market. TEC approved these funds once Industry Mentors validated the requirements.

Students needed floor assistance in EPIC to help them in trivial issues such as Soldering/Coding issues/Issues with Microcontrollers etc. To resolve this, TEC appointed 03 Floor Engineers to be available in EPIC.




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LynxE Virtual Learning

1. Title of the practice: LynxE Virtual Learning

2. Objectives of the practice:

- To enhance the Teaching Learning process
- To aid students with 24x7 learning beyond academic engagement as well
- To provide students with Virtual Labs and latest smart hybrid teaching learning technology
- To aid teachers with latest virtual labs to enhance the quality of the labs

3. The Context

The use of LynxE was the step towards enhancing the student engagement and imparting quality content and specialized Virtual Labs under LynxE from First Year to Final Year Engineering students across all the Departments. The Idea is to give students different dimension to learn other than Classroom Learning. The blend of LynxE offerings were well suited for overall growth of the students.

4. The Practice


Virtual Learning has been one of the aspects that has been brought in focus since last 01 year. TEC has envisioned to make the Virtual Learning as an essential part of the education being imparted to its student.

The introduction to the LynxE LMS by TEC Management has marked the stone going beyond the regular approaches in LMS. The LynxE LMS has features such as Simplified Content which contains the 3D Visualized concepts. Every Concept is explained in a manner to make sure it it's well perceived. Second is Instructor Led Training, A recorded session of each Unit becomes a handy one in order to learn it from Instructor. This supports and clears out any doubt of students. Students can watch 3D concepts and Recorded Instructor Lead Videos any number of times.

Next is Numerical Assist; Numerical Assist consist of all important types of Numerical solved by Instructor stored in form of recorded videos. E-Books in form of flip book in order to help student write up in the exam. Before Exams, Last Minute Revision (LMR) is conducted for each subject by the individual Instructors.

LynxE Integrated Virtual Labs are having the significant impact in Institutes Virtual Learning and to overall Teaching Learning Process. **LynxE Virtual Programming lab** recorded 90 thousand submissions across our both Institutes




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(TEC- Nerul Campus and COE, Osmanabad Campus). We conducted 28 real Labs in our LynxE Virtual Programming Lab across all departments. It Covered major programming languages from C Programming, Java, DBMS, PHP to ruby rails etc. **Circuit Simulation Lab** was popular as it gives a multiple outputs and options that helps students to check for waveform output on the go and Ability to clear all the concepts of basic electronics and Digital Electronics. We covered around 20 Electronics related Labs. **Remote Electronic Hardware Lab** was integrated with LynxE to provide access remotely placed Lab Setup in Australia to our students. This lab is a real lab connected when required by students. For Mechanical Engineering students, TEC made the High Configuration Lab Computers available for them. This helped students to work on the software that are too heavy to be installed on their laptops/Desktop at Home. **MATLAB Grader** and Machine Design Online virtual Labs enabled students for better learning.

Terna Interactive Zybooks (By Wiley India) are a unique offering in LynxE integrated services. The Zybooks for each technical domain have interactive online book. It have animations and quizzes to make sure student is learning and perceiving the concepts. The whole experience of having the Virtual Learning at are our disposal greatly enhance the opportunity to learn at self-pace and not to miss out on anything in academics.

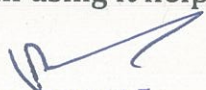
5. Evidence of Success

We have seen the utilization go high on regular interval. Students have utilized the Virtual Labs beyond academic hours. We have the analytics feature that shows the daily utilization report in LMS. LynxE Virtual Programming lab recorded 90 thousand submissions across our both Institutes (TEC- Nerul Campus and COE, Osmanabad Campus). Circuit Simulation Lab was also popular and its utilization was also good. Remote Electronic Hardware Lab is a real lab connected when required by students. MATLAB Grader also helped student to submit assignment online. Following are the utilization and feedback. We have observed the utilization of Virtual Labs starting from 8 pm, peaks around 10 pm and observed traffic till 5 am in the morning.

6. Problems encountered and resources required

Adaption was a challenge initially but once it started professors were comfortable. Adaption of Virtual labs was a challenge for students as well but later, it was comfortable. Constant orientation and assistance in using it helped students to use it effectively.




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Engineering Product Innovation Center | 2023-24

We have focused on ROBOCON 2024 and IIT e Yantra competition along with other significant Competition in AY 2023-24.

Flipkart Grid 5.0

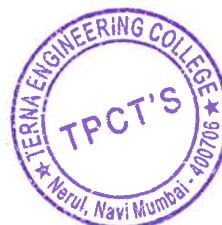
In the dynamic realm of e-commerce, automation is crucial for meeting customer demands. Despite advancements, challenges persist in "Automated Singulation" – isolating individual parcels from bulk shipments. This competition focuses on three key aspects: Package Detection, Package Handling, and Shipment Label Placement. E-commerce giants in India grapple with dispatching packages to over 19,000 postal codes, requiring innovative solutions.

The competition unfolds in three rounds, assessing theoretical knowledge, operational capabilities through video submissions, and culminating in a competitive challenge among the top 20 teams. This report outlines our team's journey, emphasizing preparation, experiences, challenges, and achievements. It sheds light on the competition's significance in addressing automation challenges in the e-commerce sector.

II. Team Overview

- Team leader: Dhiraj Mehta TU6F2122002 (T.E Mechatronics)
- Team member: Abhinav Shetti TU6F2122005 (T.E Mechatronics)
- Team member: Nandini Bhagat TU6F2122011 (T.E Mechatronics)
- Team member: Prateek Raikar TU6F2122008 (T.E Mechatronics)


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III. Competition Details

Objective:

The competition centres on evaluating participants capabilities in three key aspects.

i. Package Detection: Contestants must showcase their ability to accurately detect individual packages within a group.

ii. Package Handling: Teams are challenged to pick a package from the group and precisely drop it into the designated Drop-Zone.

iii. Shipment Label Placement: A critical requirement is ensuring that the shipment barcode is correctly positioned on top of the package when dropped into the Drop-Zone.

Package Specifications:

- There are 15 packages, categorized into three types:
 1. 5 Small Box Type Packages: Approximately 2.5x4x8 inches
 2. 5 Medium Box Type Packages: Approximately 12x8x6.5 inches
 3. 5 Flyer Type Packages: Approximately 13x10x1 inches
- All packages have a shipment label on one side.
- Maximum package weight for all types is less than 500 grams.

Competition Structure:

i. MCQ Evaluation Round: Teams undergo a Multiple-Choice Question (MCQ) evaluation to demonstrate theoretical knowledge. Successful clearance advances teams to the next round.


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ii. Video Submission Round: Teams submit videos showcasing the operational capabilities of their developed robots. If the Team is further shortlisted, they compete in the finals.

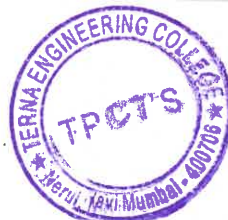
iii. Final Round: Top 50 teams from colleges across India compete in the third and final round. The challenge is to build the fastest and most efficient automated singulation system.

Current Team Status:

- The team has demonstrated competence by successfully clearing the MCQ Evaluation Round.
- Successfully shortlisted for the finals, the team competed at the national level.
- The finals took place at **IIT Madras on 5th January.**
- While the team didn't secure a victory in the competition, the experience gained and lessons learned contribute to ongoing growth and improvement in the realm of automated singulation.




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IV. Proposed Solution:

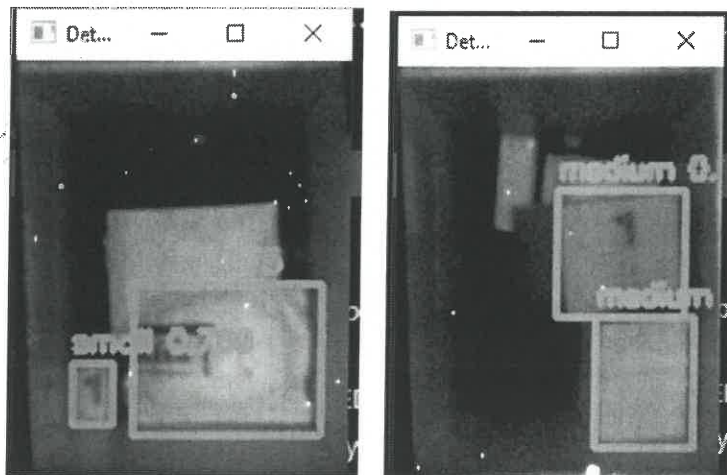
This project addresses the challenge of automated singulation in Indian logistics by developing an advanced robotic arm system. The robotic arm serves as a transformative solution, streamlining parcel selection and handling. The project focuses on designing a highly adaptable robotic arm with advanced computer vision and machine learning to reduce manual intervention, enhance efficiency, and minimize errors.


The emphasis on gentle package treatment aims to reduce damage during singulation and transit. The system's scalability is tailored to accommodate diverse pin code locations across India, adapting to various logistics setups. The project's ultimate goals include improving the customer experience, minimizing environmental impact, and promoting a sustainable future for the logistics industry.

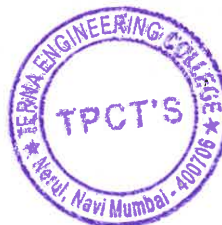
To optimize logistics operations, the package handling process is divided into three interconnected stages:

1. 3D Scanning of Jumbled Boxes:

- Utilizes advanced 3D scanning to assess the topmost box in a stack, creating a detailed spatial map.
- Crucial for efficient parcel selection in subsequent steps.

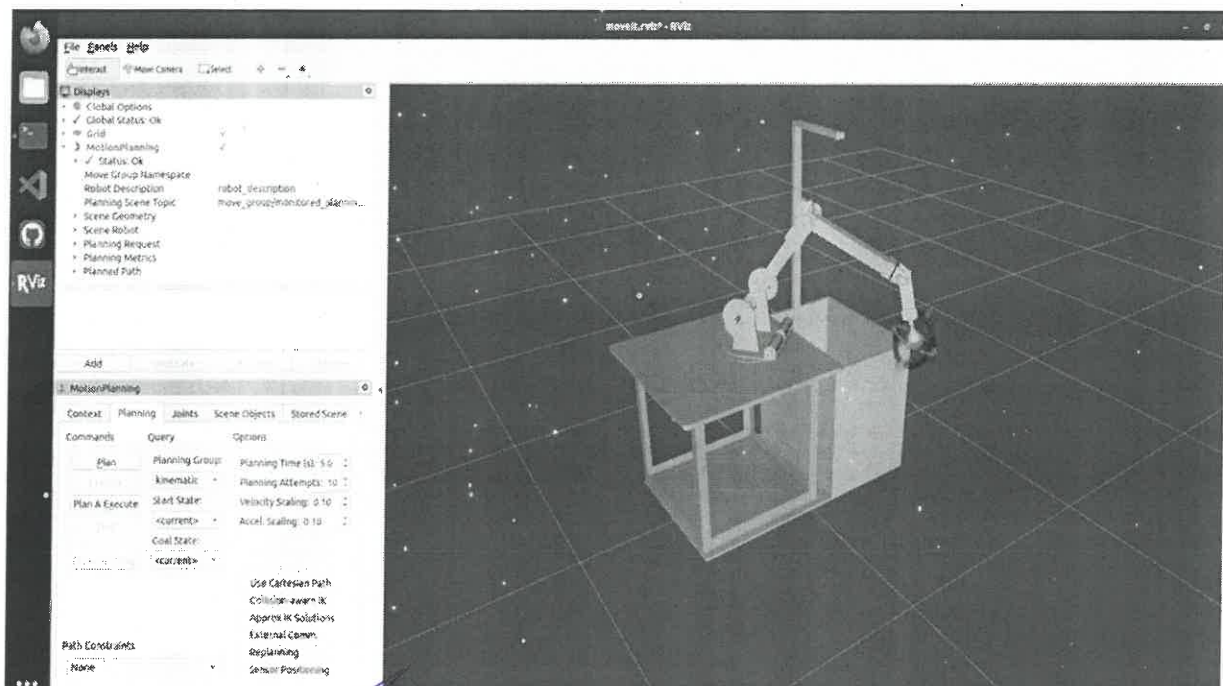
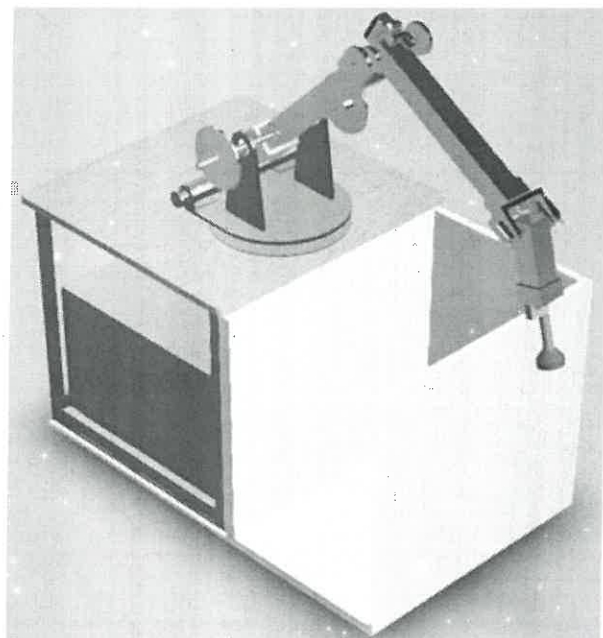
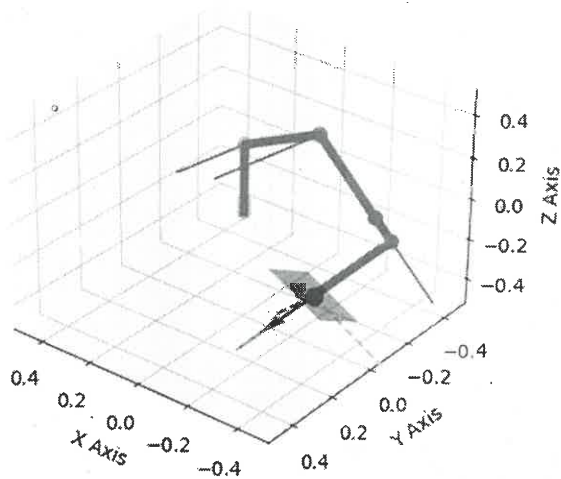



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2. Motion Planning of the Robotic Arm:

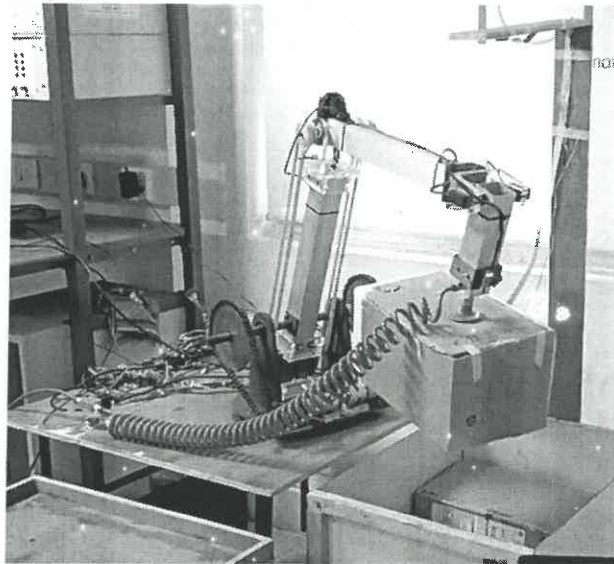
- Determines the orientation of the topmost box through 3D scanning.
- Develops a precise path for the robotic arm, optimizing for speed, accuracy, and safety.
- Considers spatial data to calculate the ideal trajectory for picking up the designated box.



3. Suction Cup Manipulation for Package Transfer:

- Robotic arm, guided by motion planning, accurately reaches the topmost box.
- Equipped with a gentle suction cup, securely holds the box.
- Transports and places the box in the designated drop zone with precision, minimizing the risk of damage.

This structured procedure enhances singulation automation, reduces manual intervention, minimizes errors, and improves the overall customer experience. The adoption of advanced technologies and meticulous planning contributes to a more efficient and sustainable future in logistics and supply chain management.



V. Competition Performance

Our team's remarkable journey in the competition culminated in a prestigious position as finalists. Out of the entrants from Maharashtra, only two teams were selected for this coveted status, our team being one of them. This accomplishment not only underscores our excellence within the state but also signifies our competence on a national level in the challenging domain of automated singulation. Although the ultimate victory eluded us, securing a finalist position alongside a select group highlights our team's proficiency. This experience serves as a valuable learning opportunity, fuelling our commitment to continuous improvement. As we


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reflect on the competition, our focus remains on leveraging these lessons for future endeavours, ensuring that our team continues to thrive and innovate in the dynamic landscape of advanced automation.

VI. Outcomes

1. Precision in 3D Scanning:

High precision in 3D scanning is fundamental for accurate parcel identification.

2. Optimizing Motion Planning Algorithms:

Continuous refinement of motion planning algorithms ensures efficiency in robotic arm movements.

3. Suction Cup Manipulation Techniques:

Ongoing improvement in suction cup techniques is critical for secure and damage-free package transfer.

4. Integration of Computer Vision and ML:

Regular updates to computer vision and machine learning capabilities enhance system adaptability.

5. Error Minimization Strategies:

Implementing robust error detection mechanisms is integral to a reliable automated system.

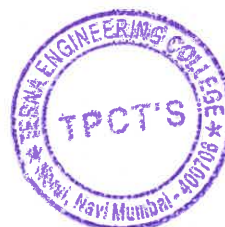
6. Perseverance in Refinement:

Consistent refinement of techniques is essential for achieving excellence in technological solutions.

7. Adaptability in Innovation:

-Adapting to emerging technologies and incorporating feedback is crucial for sustained innovation in technical projects.


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VII. Summary

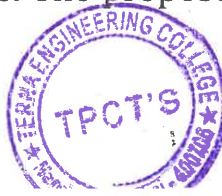
- Developed an automated singulation system for Flipkart Grid 5.0.
- Aligned with competition's focus on e-commerce logistics automation.
- Met key criteria: Package Detection, Robotic Arm Motion Planning, Suction Cup Handling.
- Used advanced 3D scanning for accurate parcel selection.
- Executed efficient and secure robotic arm path planning.
- Equipped robotic arm with a suction cup for precise package transfer.
- Addressed competition's emphasis on careful, damage-free package treatment.
- Innovative approach positioned project as a potential solution for competition challenges.
- Integration of cutting-edge technologies aimed to enhance competitiveness.
- Versatility suggests potential applications beyond e-commerce in various industries.

VIII. Conclusion

The Flipkart Grid 5.0 competition has been a transformative experience for our team, marking our journey as finalists with pride. Securing this position among two teams from Maharashtra and amidst a pool of 20 from across the nation validates our commitment to addressing the intricacies of automated singulation in the e-commerce sector.


While the competition's ultimate victory eluded us, the lessons learned and technical insights gained are invaluable. The proposed robotic arm system,

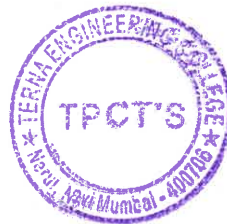

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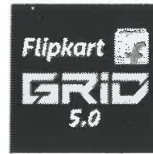


integrating 3D scanning, motion planning, and suction cup manipulation, not only addresses the challenges presented but sets the stage for future advancements in logistics automation. As we conclude this chapter, our team is eager to carry forward the knowledge acquired, continually refining our approach to automated singulation and contributing to the evolution of logistics and supply chain management.




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Certificate of Merit

This is to certify that
Nandini Bhagat

of Terna Engineering College Third Year
has demonstrated unmatched dedication and technical
expertise, overcoming complex challenges to earn the
title of National Finalist of Flipkart GRID 5.0 organized
by Flipkart.




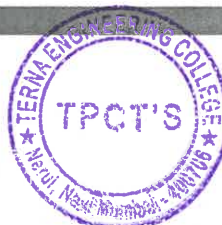
Certificate of Merit

This is to certify that
Dhiraj Mehta

of Terna Engineering College Third Year
has demonstrated unmatched dedication and technical
expertise, overcoming complex challenges to earn the
title of National Finalist of Flipkart GRID 5.0 organized
by Flipkart.




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Certificate of Merit

This is to certify that
Prateek Raikar

of Terna Engineering College Third Year
has demonstrated unmatched dedication and technical
expertise, overcoming complex challenges to earn the
title of National Finalist of Flipkart GRID 5.0 organized
by Flipkart.



18th Aavishkar Research Convention 2023-24

Avishkar Research Convention is the platform for development of research culture and scientific temper among the students, scholars and teachers from under-graduate to doctoral level. It will also help to develop skill, review new dimensions of explored areas of knowledge as well as the unexplored areas of enquiry. Since the pandemic has imposed many restrictions, it was not possible to conduct the convention as per the regular mode last year. However, in such scenario, the University of Mumbai was the only University to organize the Avishkar Research Convention by inviting research proposals in the year 2023-24. The convention was successfully organized with overwhelming response of the students in all categories and levels. This year also the conditions are not much better to conduct laboratory or field work. So, it is decided to organize the convention on virtual platform as per the previous year in the form of


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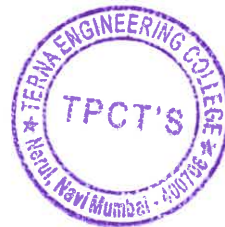
research proposals. This will ignite the curious mind of the students to propose their ideas and develop the skill to convert them into research proposal. There will be two rounds for the convention 1) Selection Round (District/Zone Level) 2) Final Round (University Level) Page 2 of 11 In the selection round, the research proposal will be invited online. There will be no presentation of the research proposal. The submitted research proposal will be assessed by the juries as per the category and level and then selected research proposal will be invited for final round. In the final round, students whose research proposals are selected for final round will be invited for online presentation in front of jury panel. 2. Categories and Levels Students of the University of Mumbai are allowed to participate in any of the following category / discipline irrespective of their own discipline / course Categories / Disciplines Category

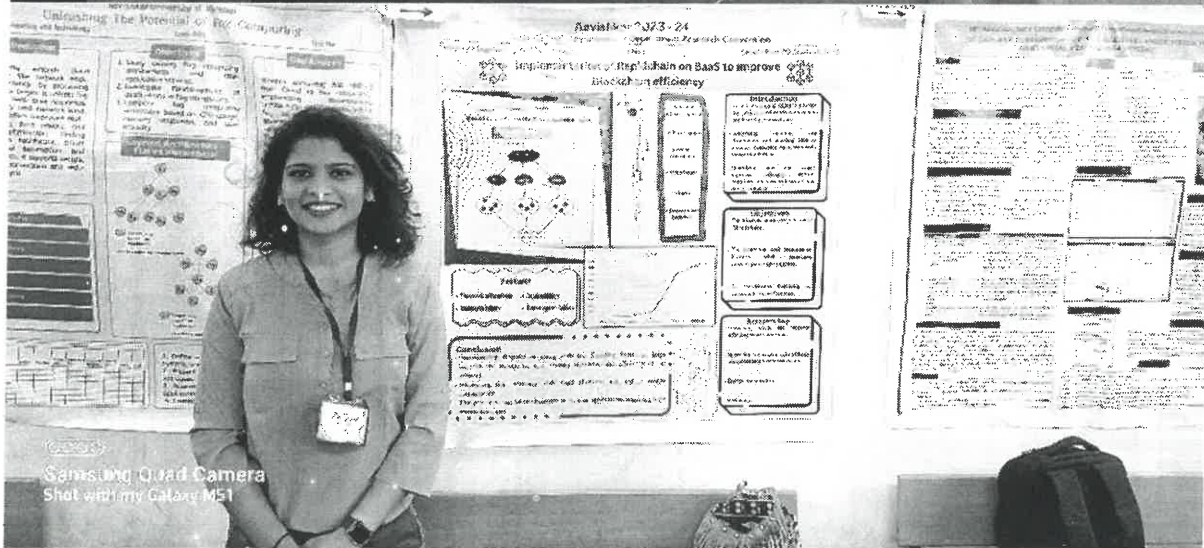
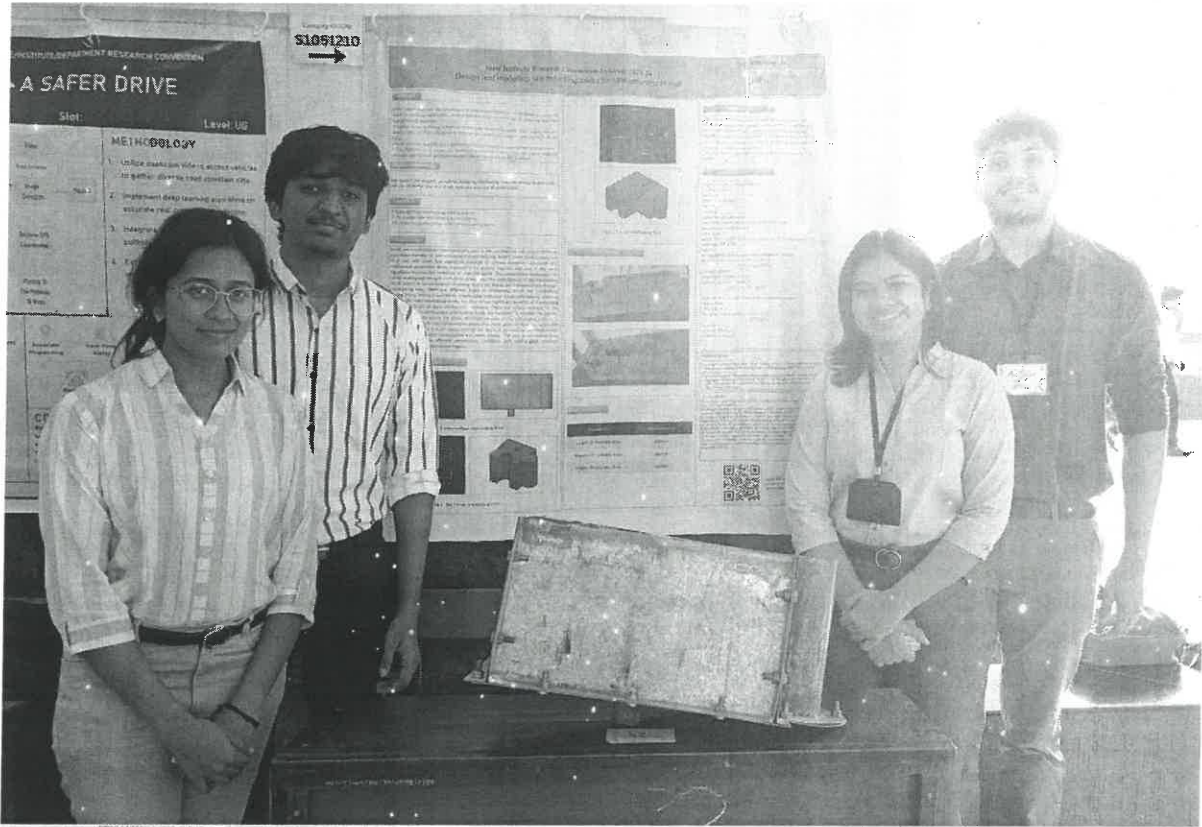
1: Humanities, Languages and Fine Arts Category 2: Commerce, Management and Law Category 3:


Pure Sciences Category 4: Agriculture and Animal Husbandry Category 5: Engineering and

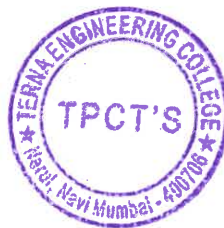
Technology Category 6: Medicine and Pharmacy Students can participate in any of the above categories as per the levels whichever suits them as indicated below Levels Level 1: Undergraduate Students (UG) Level 2: Postgraduate Students (PG) Level 3: Post PG Students (PPG)

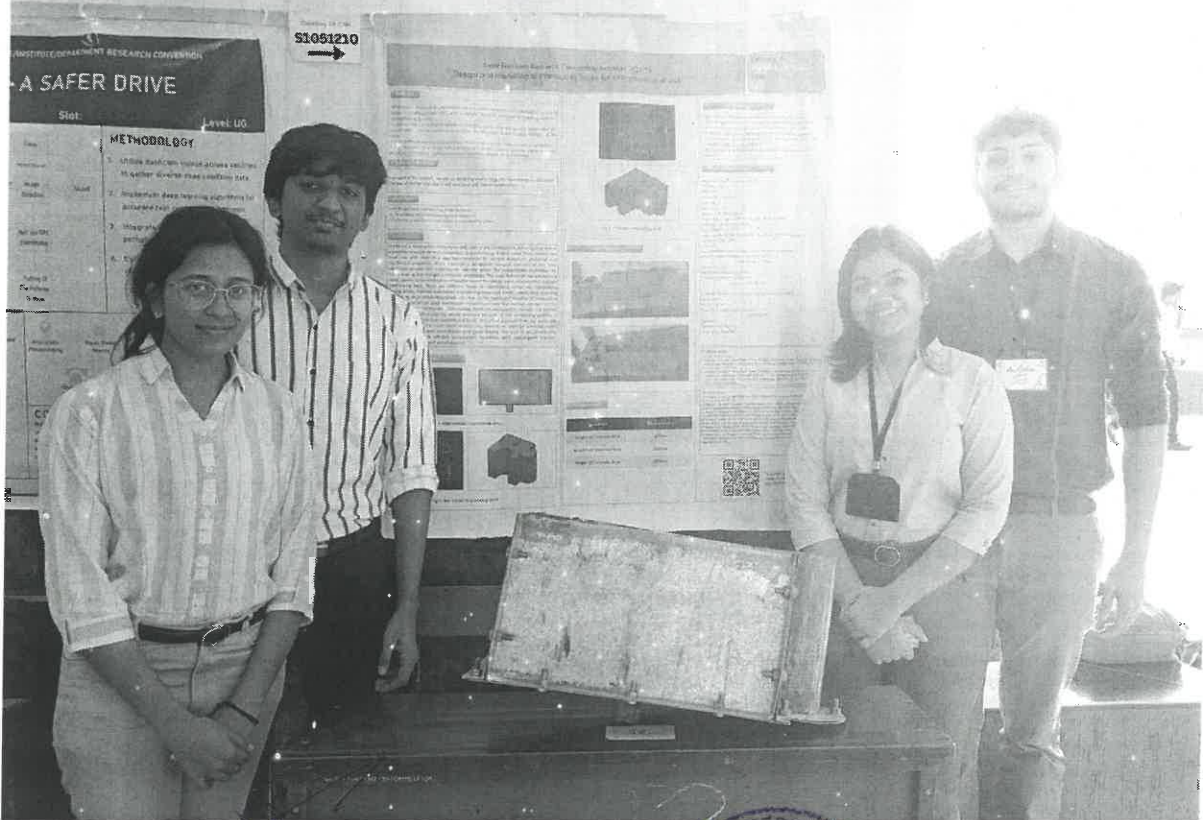

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Team "D Vinci bot" and "Design and Development of Interlocking blocks" were selected for Podium presentation. Civi Team "Design and Development of Interlocking blocks" selected for final round.



University of Mumbai
Department of Students' Development

**18th Inter-Collegiate/Institute/Department Avishkar Research
Convention
AY-2023-24**

College: Terna Engineering College, Nerul (CODE: 10-14)
(Zone: Engineering Colleges/Institutes)

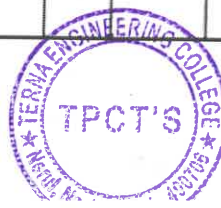
Consolidated Entry Form-II (for Registration of Research Project)

Category: Engineering and Technology

Level: UG

Sr.No	Project Title	Name	DOB	Class	Division	Roll No	PRN/PG Registration No.
1	Da_Vinci_Bot	Raikar Pratik (Presenter)	11/08/2003	TE	A	7	
2	Da_Vinci_Bot	Shetti Abhinav	06/07/2003	TE	A	4	
3	Da_Vinci_Bot	Mehta Dhiraaj	12/03/2003	TE	A	01	
4	Da_Vinci_Bot	Bhagat Nandini	08/07/2003	TE	A	10	
5	Design and modelling of interlocking bricks for strengthening of wall	Khedkar Pranav (Presenter)	14/04/2002	BE	A	9	2020016402048775
6	Design and modelling of interlocking bricks for strengthening of wall	Chaudhri Hasmita	10/03/2002	BE	A	19	
7	Design and modelling of interlocking bricks for strengthening of wall	Patel Palash D	09/09/2002	BE	A	50	
8	Design and modelling of interlocking bricks for strengthening of wall	Chavan Aishwarya	20/09/2002	BE	A	30	
9	Design Of portable water bottle filter	Ghanghale Anammay Uttam	14/04/2003	TE	A	56	
10	Design Of portable water bottle filter	Malavni Yogesh	11/10/2002	BE	A	60	
11	Design Of portable water bottle filter	Chinarathod Vinod Kisan (Presenter)	16/01/2003	TE	A	8	
12	Design Of portable water bottle filter	Ahirwar Shubham Navin	06/08/2003	TE	A	22	
13	IOT Based Smart Hydroponic Monitoring System	Syde Rohan (Presenter)	10/07/2000	BE	A	6	

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University of Mumbai
Department of Students' Development

**18th Inter-Collegiate/Institute/Department Avishkar Research
Convention
AY-2023-24**

College: Terna Engineering College, Nerul (CODE: 10-14)
(Zone: Engineering Colleges/Institutes)

Consolidated Entry Form-II (for Registration of Research Project)

15	IOT Based Smart Hydroponic Monitoring System	Singh Rohit Bijendra	03/12/2001	BE	A	12	
16	IOT Based Smart Hydroponic Monitoring System	Kinare Parva	19/08/2000	BE	A	36	

Level: PPG

Sr.No	Project Title	Name	DOB	Class	Division	Roll No	PRN/PG Registration No
17	Implementation of Rapid chain on BaaS to improve Blockchain efficiency	Destimakh Neha (Presenter)	17/06/1989	PHD PURSUING	A	Td41212200	
18	Smart Agriculture	Bari Poonam Prasad (Presenter)	26/09/1981	PHD PURSUING	A	Td3f222300	

The information given above is authentic and correct as per our record


Teacher Co ordinator

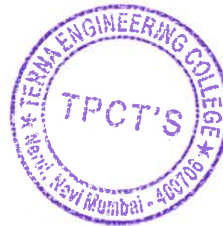
College Seal

Principal

Date:

Place:


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University of Mumbai



University of Mumbai

Aavishkar



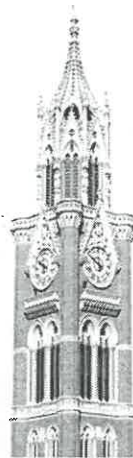
Inter-Collegiate / Institute / Department Research Convention
(Zonal Round)
Academic Year : 2023-24

Certificate of Merit

This is to Certify that Mr. Raikar Pratik of Terna Engineering College, Nerul has participated and presented a Research Project titled **Da_Vinci_Bot in Engineering and Technology** Category and UG Level at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for Engineering Colleges/Institutes Zone. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).

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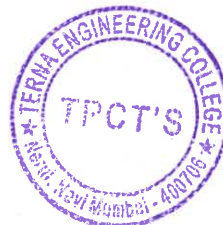
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Chembur, Mumbai



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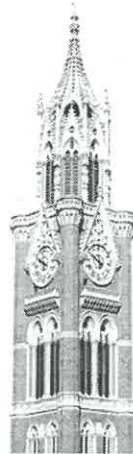
Inter-Collegiate / Institute / Department Research Convention
(Zonal Round)
Academic Year : 2023-24


Certificate of Merit

This is to Certify that Mr. Shetti Abhinav of Terna Engineering College, Nerul has participated and presented a Research Project titled **Da_Vinci_Bot** in **Engineering and Technology** Category and UG Level at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for **Engineering Colleges/Institutes Zone**. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).


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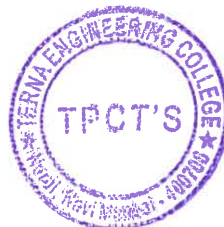
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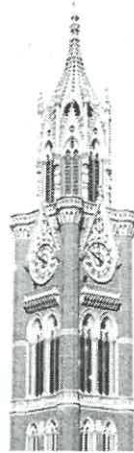
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(Zonal Round)
Academic Year : 2023-24


Certificate of Merit

This is to Certify that Mr. Mehta Dhiraj of Terna Engineering College, Nerul has participated and presented a Research Project titled **Da_Vinci_Bot in Engineering and Technology** Category and UG Level at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for **Engineering Colleges/Institutes Zone**. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).


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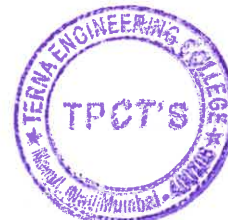
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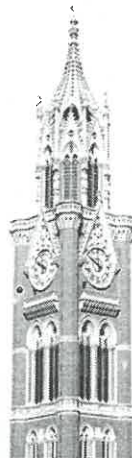
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(Zonal Round)
Academic Year : 2023-24


Certificate of Merit

This is to Certify that Mrs. Bhagat Nandini of Terna Engineering College, Nerul has participated and presented a Research Project titled **Da_Vinci_Bot in Engineering and Technology** Category and **UG Level** at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for **Engineering Colleges/Institutes Zone**. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).


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(Zonal Round)
Academic Year : 2023-24

Certificate of Merit

This is to Certify that Mr. Khedkar Pranav of Terna Engineering College, Nerul has participated and presented a Research Project titled **Design and modelling of interlocking bricks for strengthening of wall in Engineering and Technology Category and UG Level** at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for **Engineering Colleges/Institutes Zone**. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).

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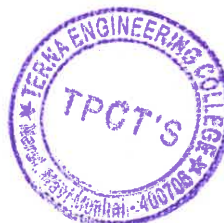
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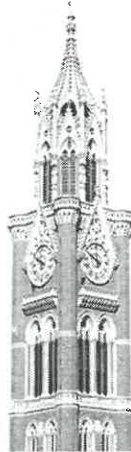
Inter-Collegiate / Institute / Department Research Convention
(Zonal Round)
Academic Year : 2023-24

Certificate of Merit

This is to Certify that Mrs. Chaudhari Hasmita of Terna Engineering College, Nerul has participated and presented a Research Project titled **Design and modelling of interlocking bricks for strengthening of wall in Engineering and Technology Category and UG Level** at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for **Engineering Colleges/Institutes Zone**. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).

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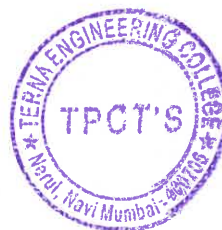
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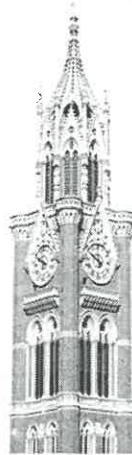


Inter-Collegiate / Institute / Department Research Convention
(Zonal Round)
Academic Year : 2023-24

Certificate of Merit

This is to Certify that Mr. Patel Palash D of Terna Engineering College, Nerul has participated and presented a Research Project titled **Design and modelling of interlocking bricks for strengthening of wall in Engineering and Technology Category and UG Level** at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for **Engineering Colleges/Institutes Zone**. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).

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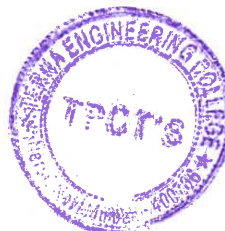


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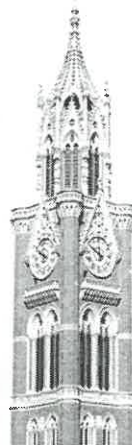
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(Zonal Round)
Academic Year : 2023-24


Certificate of Merit

This is to Certify that Mrs. Chavan Aishwarya of Terna Engineering College, Nerul has participated and presented a Research Project titled **Design and modelling of interlocking bricks for strengthening of wall in Engineering and Technology Category and UG Level** at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for **Engineering Colleges/Institutes Zone**. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).



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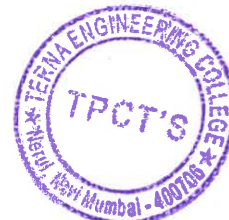
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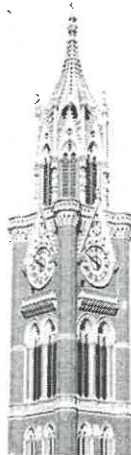
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(Zonal Round)
Academic Year : 2023-24


Certificate of Merit

This is to Certify that Ms. Bari Poonam Prasad of Terna Engineering College, Nerul has participated and presented a Research Project titled Smart Agriculture in Engineering and Technology Category and PPG Level at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for Engineering Colleges/Institutes Zone. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).


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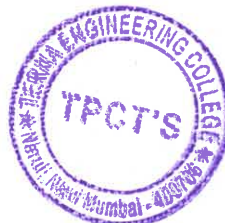
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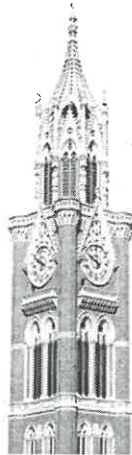
Inter-Collegiate / Institute / Department Research Convention
(Zonal Round)
Academic Year : 2023-24

Certificate of Merit

This is to Certify that Prof. Vijaypal Yadav of Terna Engineering College, Nerul has guided a Research Project titled Da_Vinci_Bot which was submitted by his student **Mr. Raikar Pratik** in **Engineering and Technology** Category and UG Level at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for **Engineering Colleges/Institutes** Zone. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).

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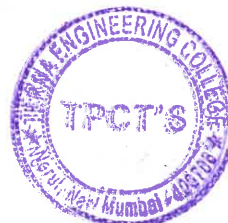
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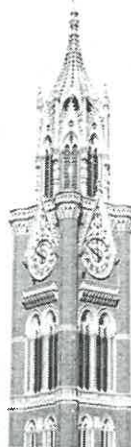
Inter-Collegiate / Institute / Department Research Convention
(Zonal Round)
Academic Year : 2023-24


Certificate of Merit

This is to Certify that Mr. Dharmesh Gangani of Terna Engineering College, Nerul has guided a Research Project titled **Design and modelling of interlocking bricks for strengthening of wall** which was submitted by his student Mr. Khedkar Pranav in **Engineering and Technology** Category and **UG Level** at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for **Engineering Colleges/Institutes Zone**. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).


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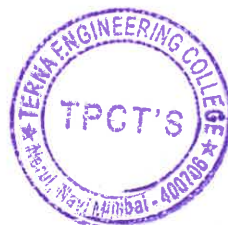
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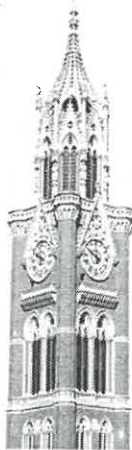
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Inter-Collegiate / Institute / Department Research Convention
(Zonal Round)
Academic Year : 2023-24

Certificate of Merit

This is to Certify that Dr. Lata Raghav of Terna Engineering College, Nerul has guided a Research Project titled **Smart Agriculture** which was submitted by her student **Ms. Bari Poonam** in **Engineering and Technology** Category and **PPG** Level at 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Zonal Round) organized by the University of Mumbai at Vivekanand Education Society's Institute of Technology, Chembur, Mumbai on December 15 2023 for **Engineering Colleges/Institutes** Zone. The said Research Project is selected for 18th Aavishkar: Inter-Collegiate / Institute / Department Research Convention (Final Round).

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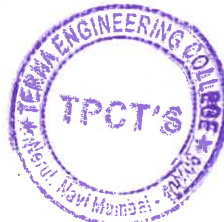


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ROBOCON 2024

We participated in ROBOCON 2024. We Cleared the first round that included design and we started working on the second round that was to be held in IIT Delhi. We got selected in second round and We were invited to compete with selected teams. We could not proceed as we did not have the fund to proceed.

Result DD-Robocon 2024 Stage-2 (Please see the Important Note below)

S. No.	University/College/Institute Name	Stage-1 (Total Marks out of 100)	Stage-2 (Total Marks out of 100)	Grand Total (1/3 of Stage-1 and 2/3 of Stage-2)
FOLLOWING TEAMS ARE SHORTLISTED FOR STAGE 3				
1	A.C. Patil College Of Engineering	99	59	72
2	Ajay Kumar Garg Engineering College	98	88	91
3	BANNARI AMMAN INSTITUTE OF TECHNOLOGY (Team: DOT ROBOTICS)	99	78	85
4	BANNARI AMMAN INSTITUTE OF TECHNOLOGY (Team:TEAM GODWIT)	90	88	89
5	Bhartiya Vidya Bhavan's Sardar Patel College of Engineering	100	77	85
6	Birla Vishvakarma Mahavidyalaya	93	95	94
7	BRAC'T's Vishwakarma Institute of Information Technology	83	91	88
8	BRAC'T's Vishwakarma Institute of Technology, Pune	100	96	97
9	COEP Technological University	100	85	90
10	Dr. D. Y. Patil Institute of Technology, Pimpri, Pune.	96	59	71
11	Dr. Vishwanath Karad World Peace University	100	83	89
12	Fr. Conceicao Rodrigues Institute of Technology, Vashi, Navi Mumbai	96	60	72
13	G H Patel College of Engineering and Technology	97	91	93
14	Government College of Engineering & Research, Avasari Khurd, Pune	100	85	90
15	GOVERNMENT COLLEGE OF ENGINEERING AMRAVATI (MAHARASHTRA)	100	79	86
16	Government College of Engineering Karad	79	90	86

39	Pimpri Chinchwad College of Engineering, Pune	97	80	86
40	PSG College of Technology	85	70	75
41	Rustamji Institute Of Technology	85.5	32	50
42	Sanjivani College of Engineering, Kopergaon	95	85	88
43	Sardar Vallabhbhai National Institute of Technology, Surat	92	89	90
44	SCTR'S Pune Institute of Computer Technology	91.5	87	89
45	Shri Guru Gobind Singhji Institute of Engineering and Technology, Vishnupuri, Nanded	92.5	85	88
46	SRM Institute of Science and Technology	100	85	90
47	St. Francis Institute of Technology	99	84	89
48	SVKM's NMIMS, Mukesh Patel School of Technology Management & Engineering, Mumbai.	97	64	75
49	Symbiosis Institute of Technology	99	76	84
50	Terna Engineering College	95	67	76
51	U.V. Patel College of Engineering	99	75	83
52	Vellore Institute of Technology, Chennai Campus	93	56	68

*FOLLOWING TEAMS ARE SHORTLISTED FOR EXHIBITION

1	Amrita Vishwa Vidyapeetham	81	10	34
2	Indian Institute of Technology (BHU) Varanasi	97	15	42
3	National Institute of Technology, Calicut	97	17	44
4	Walchand College of Engineering Sangli	93	20	44

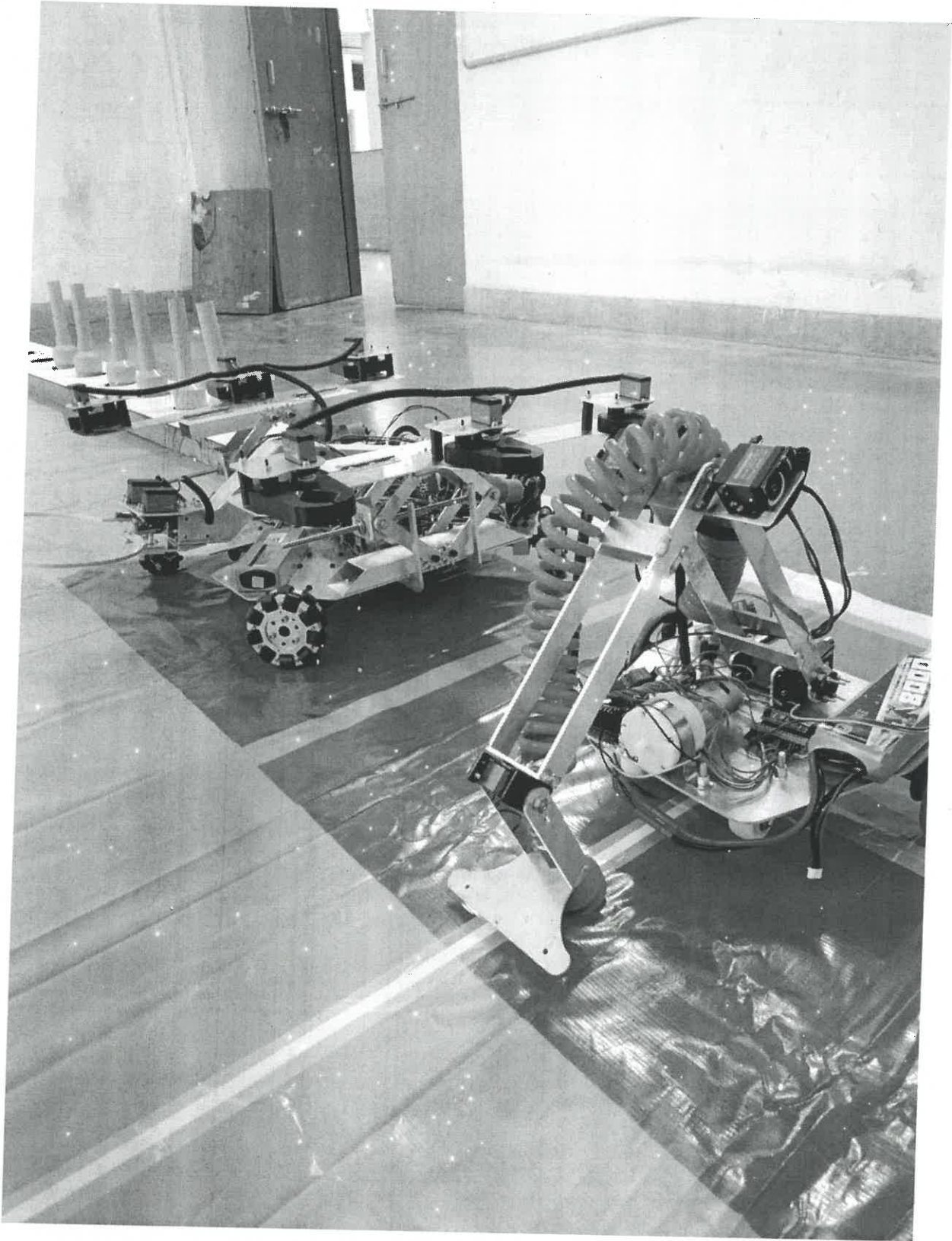
Note:


Final mode of competition (fully physical) will be announced soon.

* The teams which are shortlisted for Exhibition can show their Robots in the Competition for Exhibition in their booth as well as in the practice field also. Encouragement Certificate will be provided to those teams.

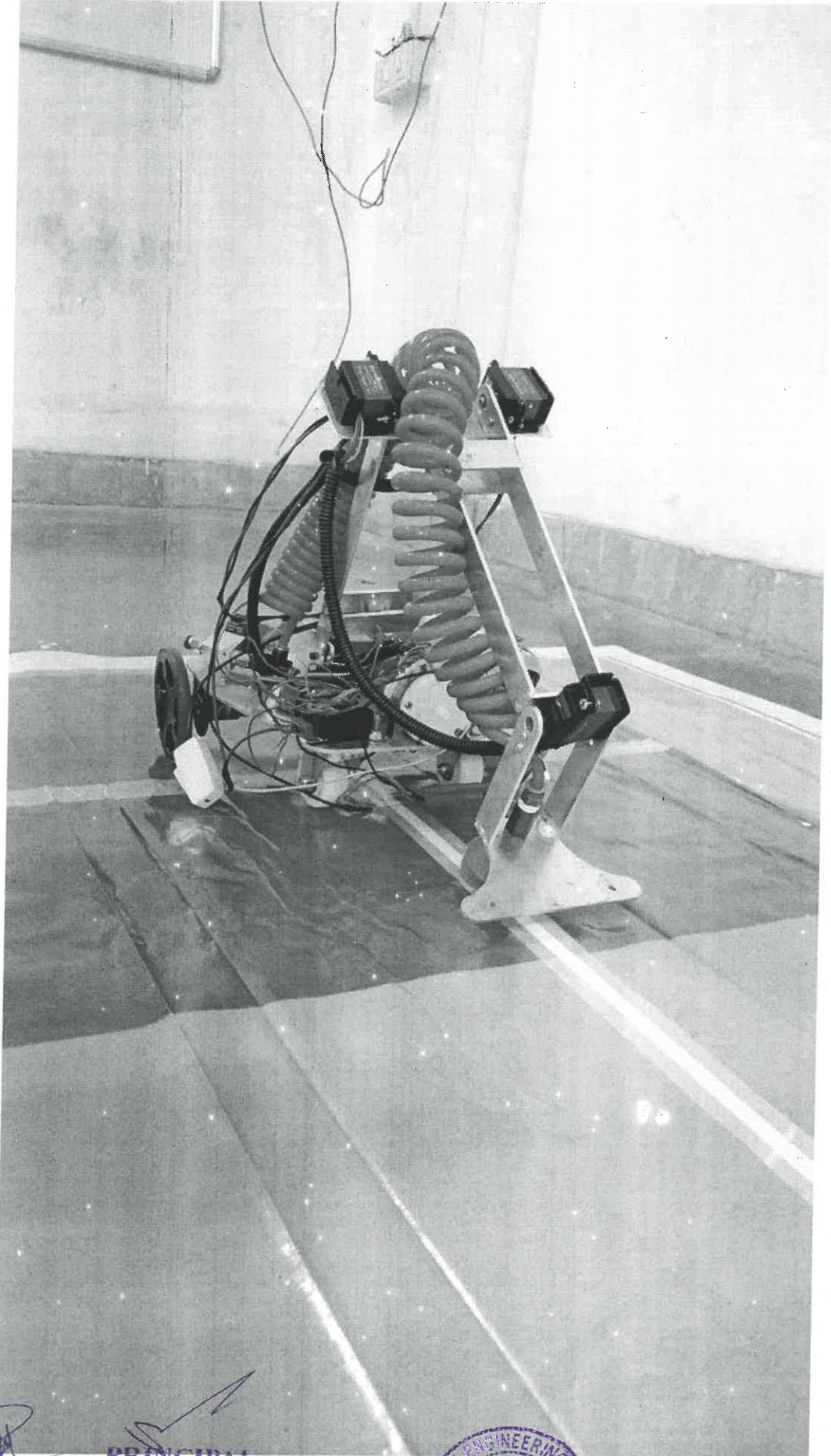
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