CHENNAI INSTITUTE OF TECHNOLOGY
Transforming Lives

DEPARTMENT OF MECHATRONICS ENGINEERING

INNOVATION IN TEACHING LEARNING PROCESS

1) Innovation in Teaching-Disseminated in college website
    a. Crossword
    b. Multiple choice questions
    c. Peer Group learning
    d. Identify the parts
    e. Quiz
    f. Paper presentation
    g. Pre-Reading materials
    h. E-Learning
    i. Workshops
        i. National
        ii. International
    j. Competition
    k. Self learning
    l. Design
    m. Robotics and Automation
    n. 3D Printing and Reverse Engineering
2) Technical Symposium
3) Concept a day
4) NPTEL
5) Career compass
6) Students Exchange program
7) SAE Completion
8) Alumini Talk

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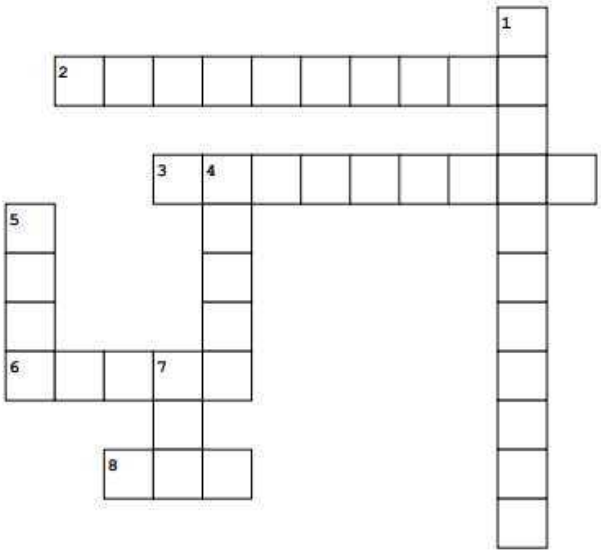
Crossword

Objective:

The crossword puzzle is to enhance vocabulary, improve problem-solving skills, and promote cognitive thinking by challenging players to fill in words based on clues.



Across

2. what is another name for a one-shot?
3. Who invented Gray code?
6. With four J-K flip-flops wired as an asynchronous counter, the first output change of divider #4 indicates a count of how many input clock pulses
8. How many OR gates are used to made encoders

Down

1. What number System has a base.
4. if an active-HIGH S-R latch has a 0 on the S input and a 1 on the R input and then the R input goes to 0, the latch will be _____.
5. binary number of decimal number 32 is x,then how many zeros are in x
7. many roles does Boolean Algebra have _____

Outcomes

The outcomes include increased word recognition, better memory retention, and the development of analytical and critical thinking skills. It also encourages learning in an engaging and interactive way.

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Digital Electronics Multiple choice questions

Objectives:
The objective of multiple-choice questions (MCQs) is to assess learners' understanding, recall, and application of key concepts quickly and efficiently. They encourage critical thinking by presenting options that require careful selection based on knowledge and reasoning.

1. The given hexadecimal number (1E.53)16 is equivalent to _____
a) (35.684)8
b) (36.246)8
c) (34.340)8
d) (35.599)8

2. The octal number (651.124)8 is equivalent to _____
a) (1A9.2A)16
b) (1B0.10)16
c) (1A8.A3)16
d) (1B0.B0)16

3. The octal equivalent of the decimal number (417)10 is _____
a) (641)8
b) (619)8
c) (640)8
d) (598)8

4. Convert the hexadecimal number (1E2)16 to decimal.
a) 480
b) 483
c) 482
d) 484

5. (170)10 is equivalent to _____
a) (FD)16
b) (DF)16
c) (AA)16
d) (AF)16

Outcomes:
MCQs provide immediate feedback on students' comprehension levels, help identify gaps in knowledge, and support consistent learning progress, making them effective for gauging understanding across varied subjects.

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Peer Group learning

Objectives:

The objective of peer group learning is to promote collaborative knowledge sharing, improve critical thinking skills, and build a supportive academic environment. To improve the performance of slow and average learner students the peer groups are formed with each group consisting of group ot students in which tow are advanced, two are average and two are slow learners

Outcomes:

Slow learner students got cleared their doubts and they felt easy to understand the concept and they shown more interest to study when they are formed Outcomes include enhanced problem-solving abilities, improved communication skills, and deeper understanding of complex topics through peer discussions and varied perspectives. This approach also builds confidence and fosters a community-oriented learning mindset.

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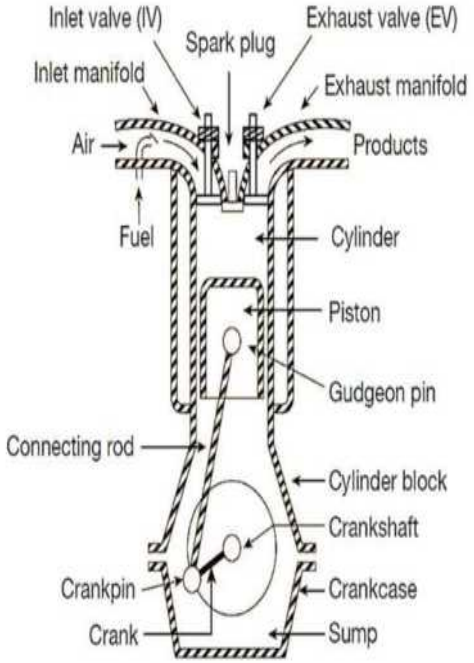
Identify the Parts

Objective: To enable students to accurately identify and understand the functions of various parts within a system, fostering foundational knowledge in system design and maintenance.

Robot Identification	IC Engines
	

Outcomes: Students will be able to

(1) recognize and name essential components,

(2) explain each part's role and function, and

(3) apply this knowledge to troubleshooting and assembling systems efficiently.

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QUIZ

OBJECTICE: Quiz is conducted not only to test the person knowledge but also to test the speed of a person's brain and how active a person can think in a given particular situation.

Outcome:

Students and faculties learnt more new trending concepts in and around in the area of Engineering.

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PAPER PRESENTATION

Objectives:

A Presentation is a means of communication which can be adapted to various speaking situations such as talking to a group, addressing a meeting or briefing a team. To be effective step by step preparation and the method and means of presenting the information should be carefully considered. This Program will not only exhibit student's technical skill along with managerial ability which is need for the growth of one's own professional and personal ability.

Outcome:

- ✓ Retrieval aids later retention. There is clear evidence from psychological experiments that practicing retrieval of something after learning it, for instance by taking a quiz or test, makes you more likely to retain it for the long term.
- ✓ Identify gaps in knowledge.
- ✓ Causes students to learn more from the next study episode. Essentially it reduces forgetting which makes the next related study area more productive.
- ✓ Produces better organization of knowledge by helping the brain organize material in clusters to allow better retrieval.
- ✓ Improves transfer of knowledge to new contexts.

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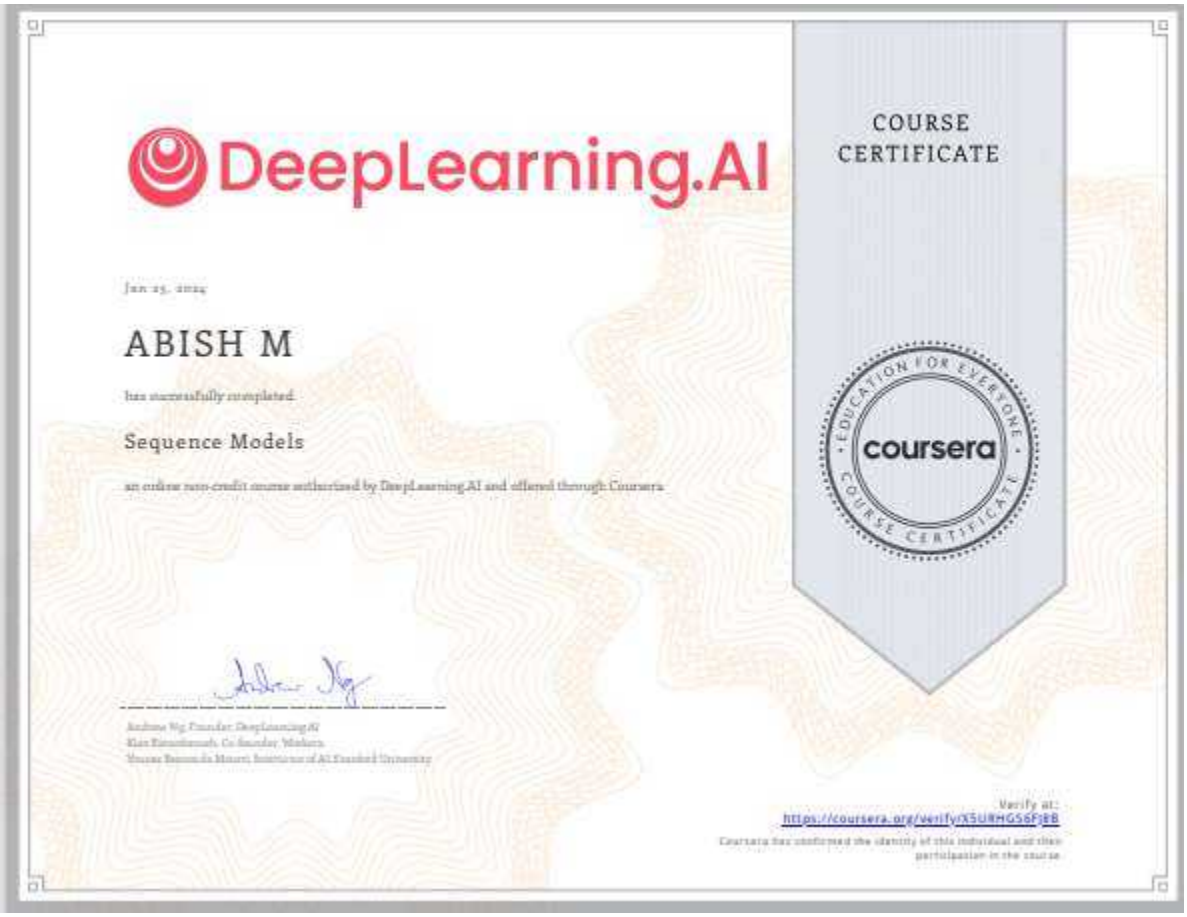
E-Learning

Objective: Online courses available for faculties and students to upgrade their knowledge in the latest technology with real time applications.



Outcomes of E-Learning in Engineering and Education:

1. **Flexible Learning Environment**: Students can access learning materials anytime and anywhere, allowing for self-paced learning and better time management, especially for those with busy schedules.
2. **Improved Retention and Engagement**: Interactive content, multimedia resources, and assessments help maintain student engagement and improve knowledge retention compared to traditional methods.
3. **Access to Global Resources and Expertise**: E-learning provides access to a wide range of learning materials from global educators and industry experts, broadening the knowledge base and perspectives available to students.

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WORKSHOP

Objective:

The objective of the workshop is to equip participants with practical skills and knowledge relevant to the topic.

Workshop on Industrial Automation
 

Outcomes

Expected outcomes include enhanced understanding of key concepts, improved problem-solving abilities, and actionable strategies participants can implement in their respective fields. Participants will leave with tangible resources and a network of peers for future collaboration.

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COMPETITION

Objectives

Participating in competitions fosters personal growth, enhances skills, and promotes teamwork. It provides opportunities to showcase talent and creativity while gaining valuable experience. Ultimately, it can lead to recognition, networking, and future opportunities in the respective field.

Outcomes

- **Skill Development**: Enhanced technical and soft skills, including problem-solving, communication, and leadership abilities.
- **Networking Opportunities**: Connections with peers, mentors, and industry professionals, potentially leading to future collaborations or job opportunities.
- **Confidence Boost**: Increased self-esteem and confidence through the experience of presenting work and receiving feedback.

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CONCEPT OF THE DAY

Objective:

It is a technical forum for the students and faculty members to upgrade their technical skills.

Outcome:

Students and faculties learnt more new trending concepts in and around in the area of Engineering.

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NPTEL

Objective: The operational objective of NPTEL is to make high quality learning material available to students of engineering institutions across the country by exploiting the advances in information and communication technology.

Elite

NPTEL Online Certification

(Funded by the MoE, Govt. of India)

This certificate is awarded to

DHARUN OVIYAM

for successfully completing the course

Industrial Robotics : Theories for Implementation

with a consolidated score of 63 %

Online Assignments	17.75/25	Proctored Exam	45/75

Total number of candidates certified in this course: 159

Jul-Oct 2023

(12 week course)

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

swayam

NPTEL outcomes include enhanced understanding of core engineering and technology concepts, accessible learning from top academic experts, and certification opportunities to validate skills for career advancement. It fosters self-paced learning and bridges gaps in technical knowledge across diverse engineering fields.

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Objective of Webinar:

Webinars are really useful in engaging the listeners through live presentations and interactive multimedia which can makes the distance feel less of a hurdle**.**

The objective of a webinar is to provide students with exposure to current industry trends, emerging technologies, and expert insights. It enhances their practical knowledge beyond classroom learning and fosters interaction with professionals. Additionally, webinars offer a platform for discussing real-world challenges and solutions in engineering fields.

The outcomes of a webinar include:

1. Enhanced understanding of industry trends, cutting-edge technologies, and practical applications.
2. Improved networking opportunities with professionals and experts in the field.
3. Increased student engagement, fostering innovation, problem-solving skills, and real-world preparedness.

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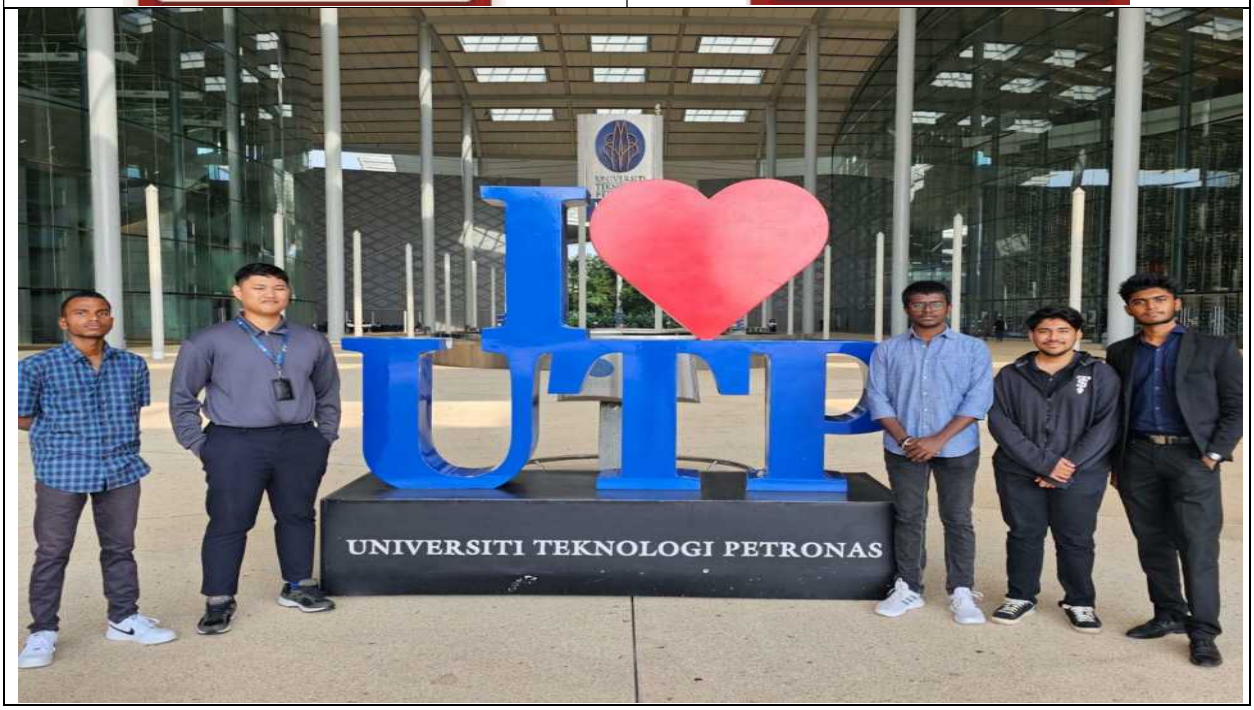
Students Exchange Program

Student exchange program (National level & International level): Through this initiative every students get benefitted in terms of technology, knowledge and cultural exchange within India and abroad.

Students Exchange Program at Universiti Teknologi PETRONAS (UTP) in Malaysia.



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Role Play

Objective:

The activities of role play were conducted in automobile engineering to identify the parts of the vehicle.

Outcome: Student actively participates in group activities and enhances their knowledge

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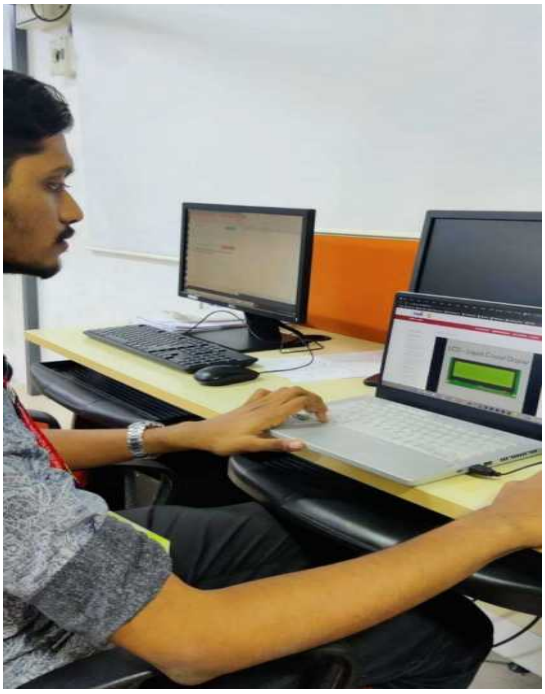
Self Learning

Objective: method of garnering information and after processing and retaining it without taking the help of another individual



Outcomes:

Self-learning helps a person in understanding the basic concept of learning and it says that everyone has to learn by himself at the end of the day

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SAE- The Society of Automobile Engineers

Objective

The SAE competition is a real-world design challenge designed to compress a typical aircraft development program into one calendar year, taking participants through the system engineering process of breaking down requirements. It exposes participants to the nuances of conceptual design, manufacturing, system integration/test, and sell-off through demonstration.

Outcome

The SAE (Society of Automotive Engineers) competition challenges engineering students to design, build, and race innovative vehicles like Formula, Baja, or Aero models. Teams are judged on design, endurance, efficiency, and performance, with top teams often securing industry recognition and job offers. Winners showcase exceptional engineering skills, teamwork, and real-world problem-solving abilities.

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ALUMNI TALK

Objective

The objective of an alumni talk is to create a platform where former students (alumni) can share their experiences, insights, and advice with current students, faculty, or other members of the institution's community.

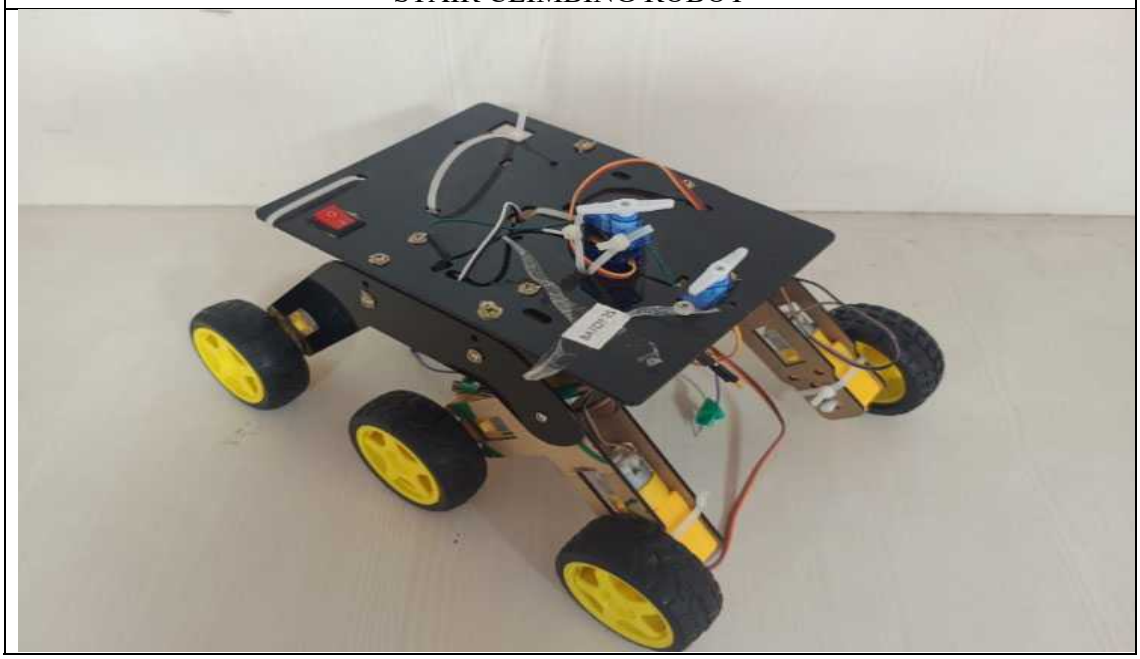
Outcome

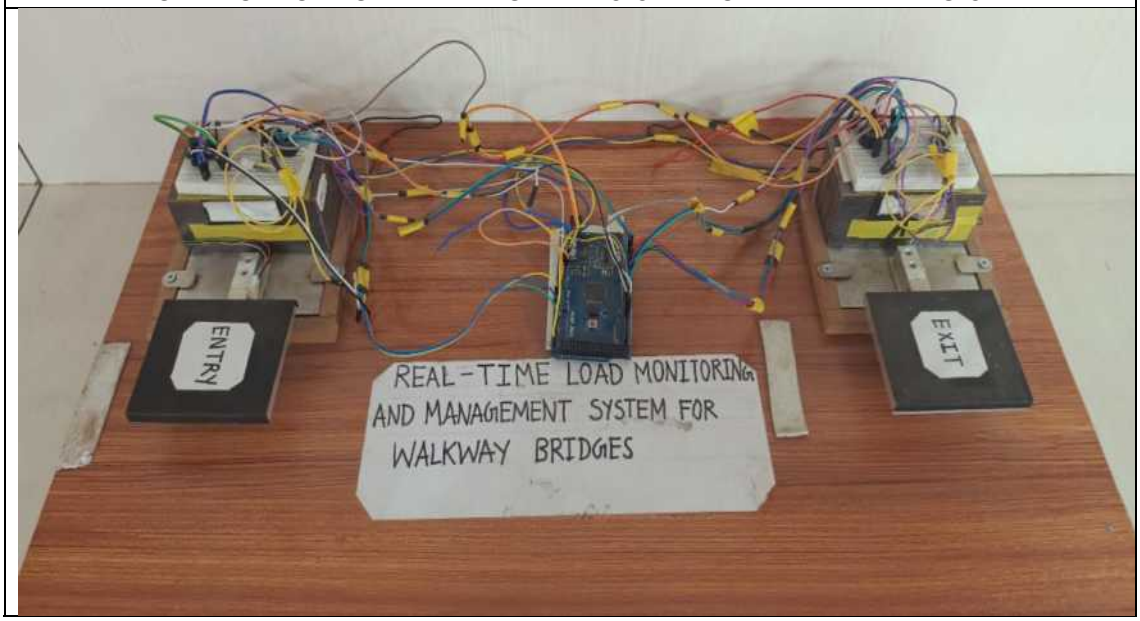
The outcomes of an alumni talk are multifaceted, impacting students, alumni, and the institution. Key outcomes include:

1. **Enhanced Student Motivation and Aspiration**: Students feel inspired by hearing about alumni achievements, motivating them to pursue ambitious goals and overcome challenges.
2. **Career Clarity and Guidance**: Students gain practical insights into various career paths, industry expectations, and skills needed to succeed. This clarity helps them make informed choices about internships, projects, and courses.
3. **Expanded Professional Network**: Students and alumni build connections that can lead to mentorship, internship opportunities, or job placements, creating a supportive professional network.

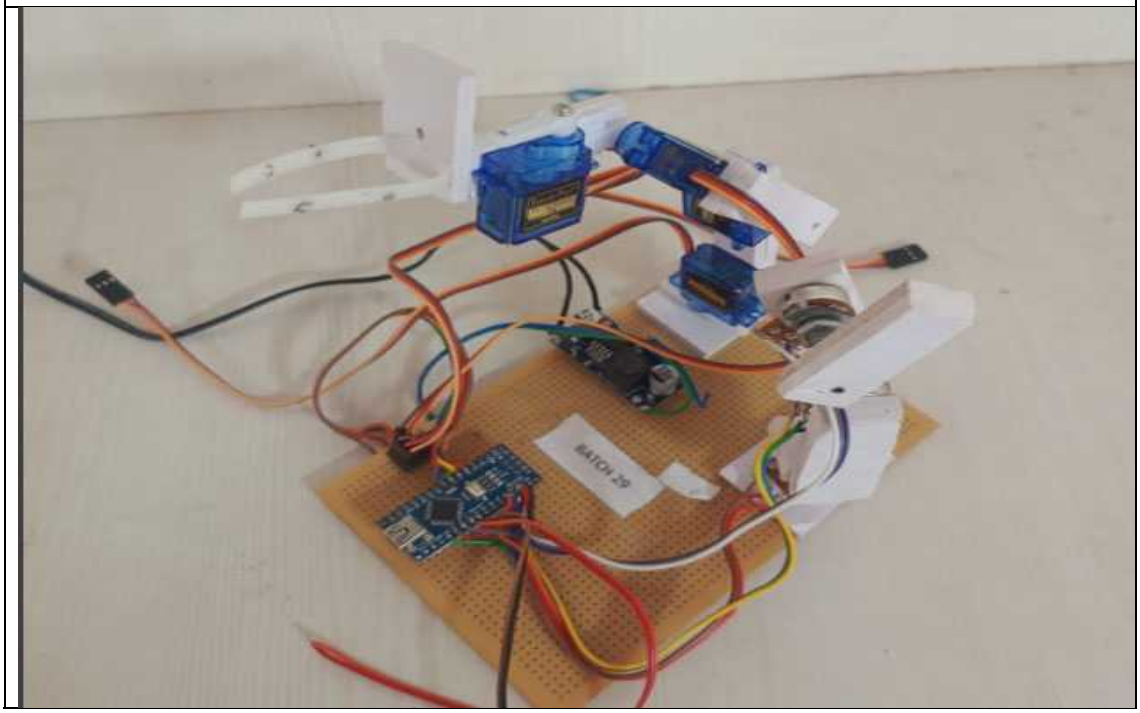
Development Activities

Working models

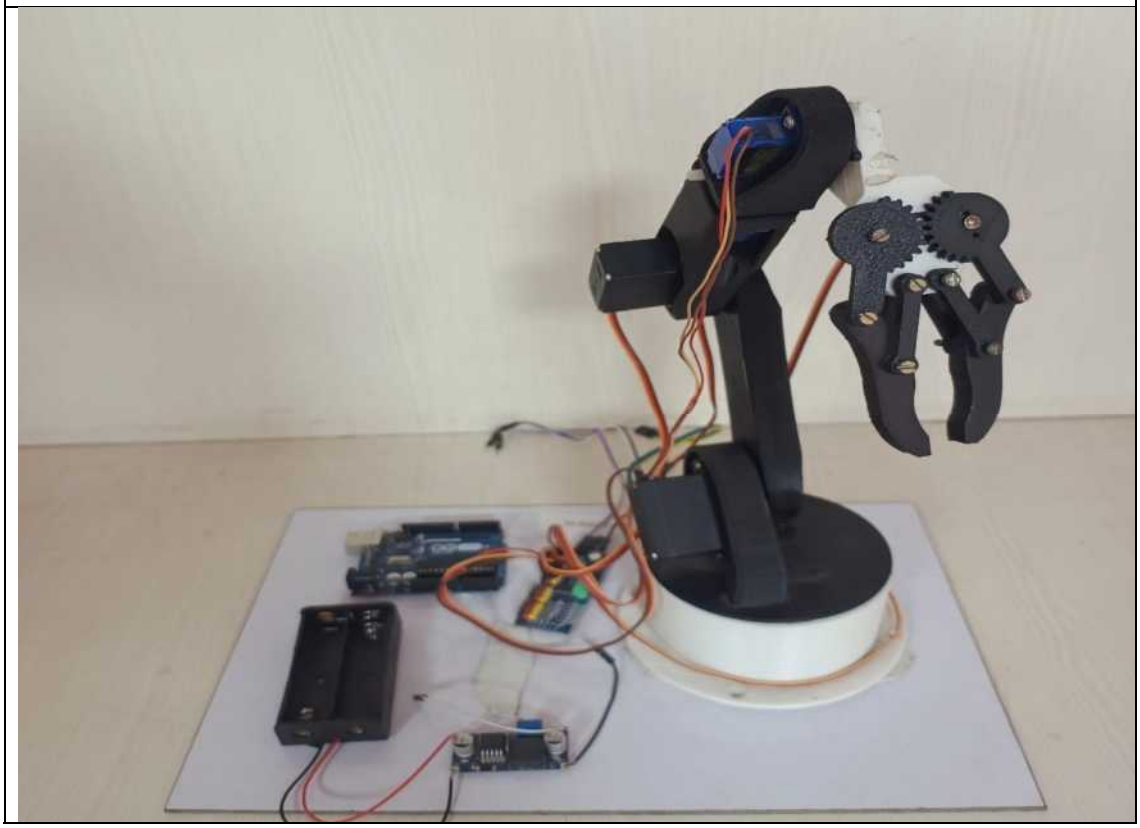
STAIR CLIMBING ROBOT


REAL TIME LOAD MONITORING AND MANAGEMENT SYSTEM FOR WALKWAY BRIDGES


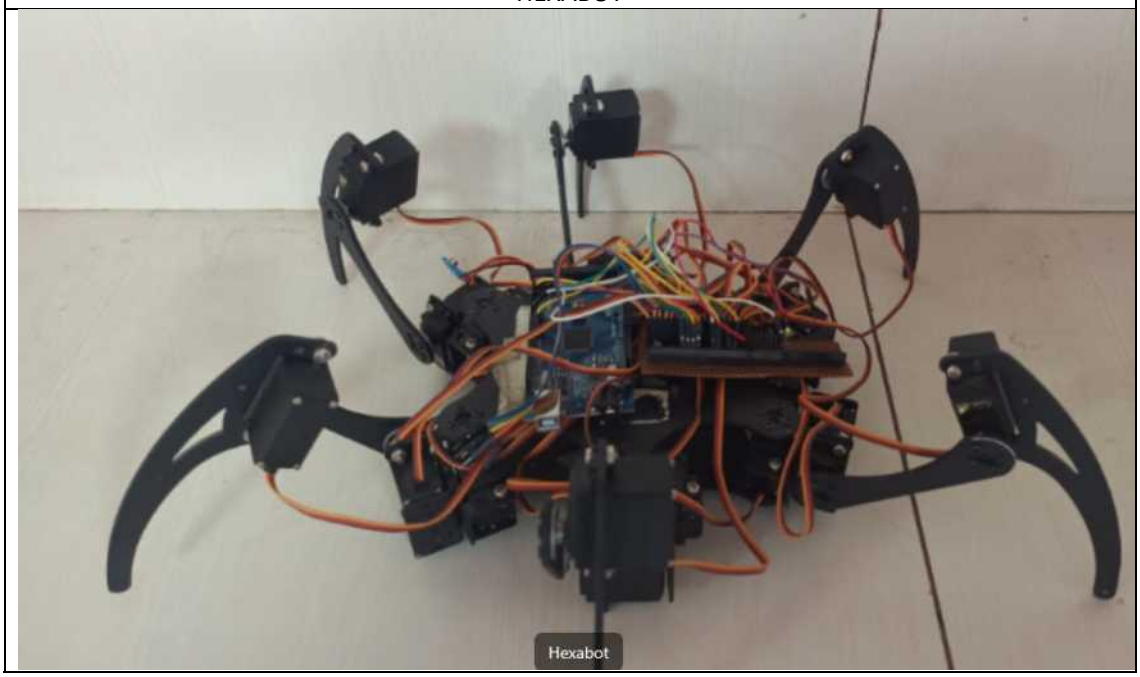
TEACH AND PLAY ROBOT



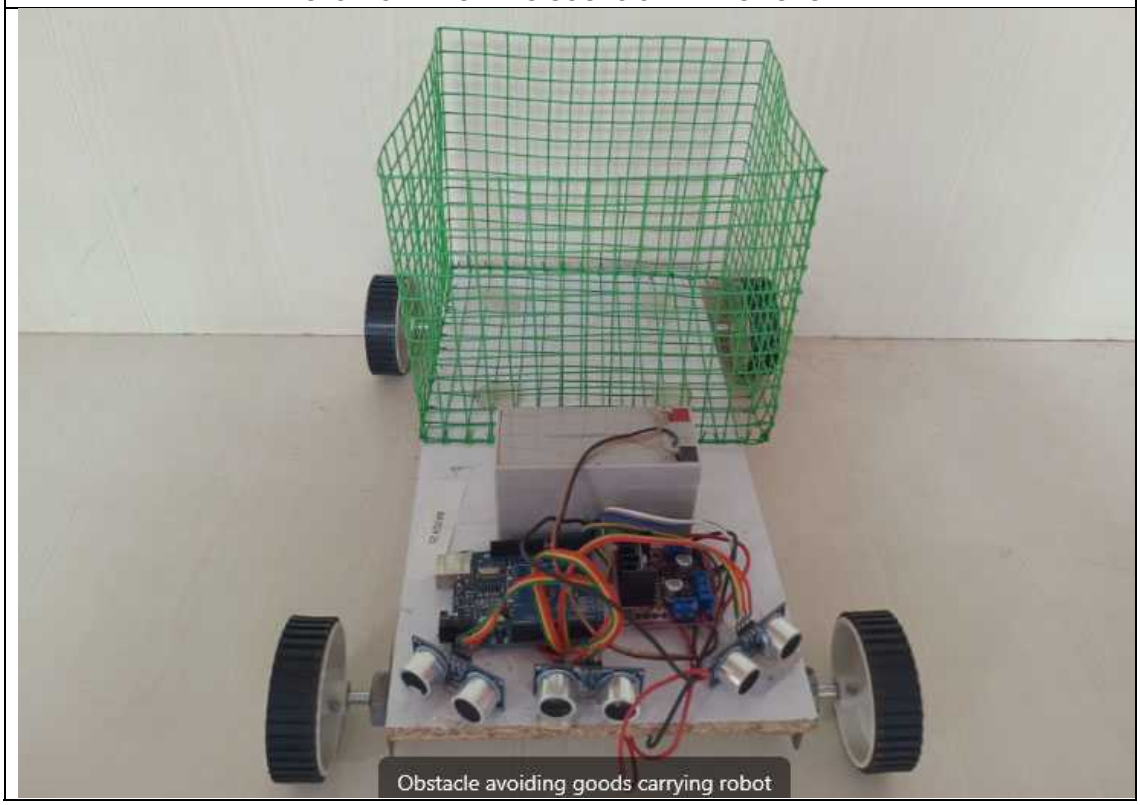
5-AXIS ROBOT



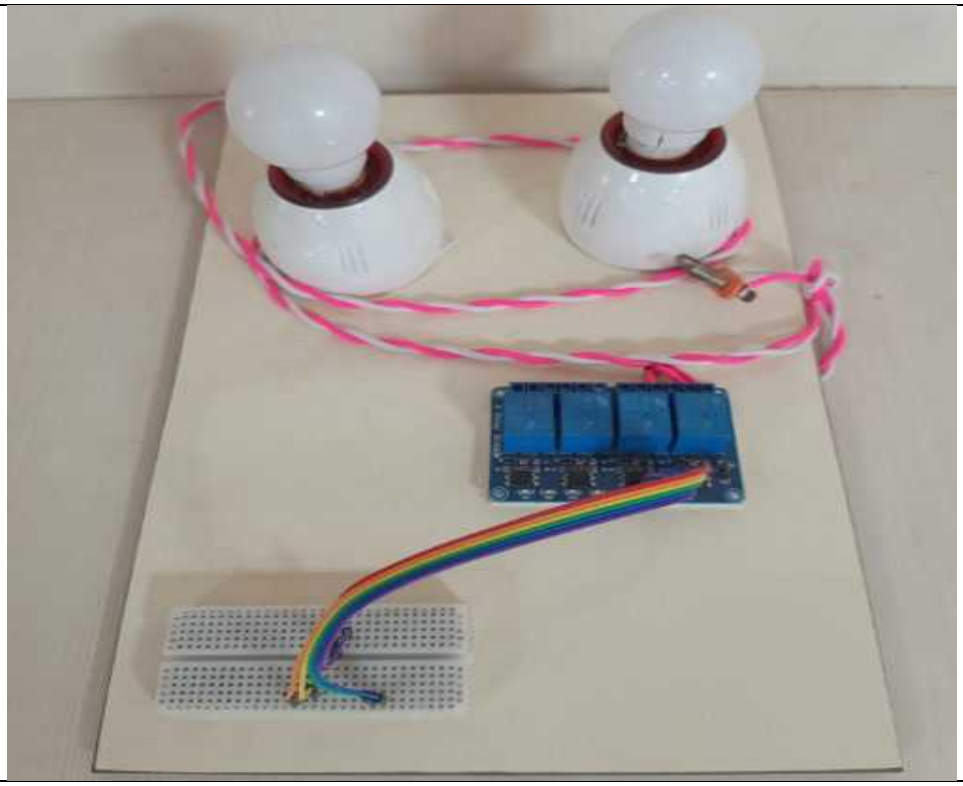
HEXABOT



OBSTACLE AVOIDING GOODS CARRYING ROBOT



HOME AUTOMATION



DEVELOPMENT OF SMART BATTERY LIFE EXTENSION