VertechxFor Tech4Teens

Date: December 19, 2024
Location: MVJ College of Engineering , Bangalore
Organized by: MVJ College of Engineering
Participants: 80 members
Duration: 9:00 AM to 3:30 PM

Introduction

MVJ College of engineering is annually celebrating the a Technical Fest named as**VertechX 12.0.** with that legacy now we are organising the "**VertechXJr"** the technical extravaganza. The students from different schools participated in the event.

In this event a few schools like Bangalore International school, Chyrsalis High , Mount litera Zee schools, Lake font schools were participated in all the four events i.e air glider, chatbot, project expo, line follower.

As we started the event with registartion desk where we have the guided the students to participate in the events and gave the instructions to participate in all the events.Air gliders, often referred to as unpowered aircraft, are fascinating tools for understanding aerodynamics, engineering principles, and lightweight construction techniques. These aircraft rely entirely on lift generated by air currents or thermals and gravity for forward propulsion, making them excellent educational tools for workshops. This report explores the design, construction, and application of air gliders in educational and practical settings.To introduce the principles of aerodynamics and the design of air gliders.here we made the students to understand the basic concepts like dimensions, parts of the plane and made themto do air gliders.

Air gliders are aircraft that do not have engines but instead glide through the air using aerodynamic principles. They rely on the following key factors:

1. **Lift:** Generated by the air pressure difference between the upper and lower surfaces of the wings.
2. **Gravity:** Propels the glider forward as it descends.
3. **Air Currents:** Provide additional lift and prolong the flight duration. Gliders come in various forms, from simple paper models to advanced piloted sailplanes
4. On that day we taught the students by using a material balsa wood gliders.

Based on the above key factors students were participated in the event.overall 12 teamsa took part in the event and coordinators made two rounds to finalise the winners.

This event is took place beside the auditorium lawn where all the teams are assembled there . judges decided to conduct the event in two rounds .In the first round they have to show that how much distance its travelling and in the second round they have to show the landing of their gliders.based on these the judges evaluated the criteria of distance , time and average points were noted those who covered the highest time and distance declared as winners.

Fig 1: Distributing the certificates to the students

Fig2: students are participated in the event

The first prize winner are Brithi from MVJ Pu college and awarded with a cash prize of Rs 5000/- and the runner up from Chrysalis High Sai Advik Jaganathan padmini, Arnav Bhagyesh , Siddhanth PrakalpSomawanshi awarded with Rs2500/-

All the participants got the certificates by Dean Students Affairs Dr Hameem Shanvas , MsRachana HR department , MVJ PU Principal Bala Krishna and PRO HariKrishna Hedge.

Project Expo

The Project Expo Event was held on 19/12/2024 at double lobby, starting at 10:30 AM and ending at 12:30 PM. The event was designed to showcase innovative projects from students across various schools, allowing them to present their ideas and solutions to real-world challenges. The expo provided a platform for students to demonstrate their creativity, problem-solving skills, and teamwork. Projects were evaluated based on their idea originality, impact, and the quality of the explanation.

Objectives of the Event
The primary objectives of the Project Expo Event were:
- To provide a platform for students to showcase their innovative ideas.
- To promote creativity, critical thinking, and teamwork.
- To allow students to receive feedback from experienced judges.
- To reward outstanding projects that demonstrate originality and practical solutions.
- To foster friendly competition and learning among participants.

Participants

- **Total Participants**: Students from different schools, forming several project groups around 14 groups.
- **Number of Judges**: 3 judges one external and two internal.
- **Judging Criteria**: The projects were evaluated based on:
    - **Idea Originality**: How unique and innovative the project idea was.
    - **Explanation**: How well the team explained their project, the thought process behind it, and the potential impact.
    - **Presentation Skills**: The clarity and professionalism of the presentation.

Fig : 3 With enthusiasm and confidence, the students described the process behind their projects, impressing the judges with their knowledge and passion

Event Activities

- **Project Presentations**: Each participating group had an opportunity to present their project. Students explained their ideas, how they developed them, and the potential impact or solutions they offer.
- **Judging Process**: After all the presentations, the three judges reviewed the projects and scored them based on the aforementioned criteria: originality of the idea, quality of explanation, and presentation skills.

Fig : 4 The judges posed insightful questions to the students, probing deeper into the feasibility and potential impact of their projects.

Highlights of the Event

- **Judges' Insights**: The judges were experienced professionals from various fields, offering valuable insights and feedback to the students about their projects. Their suggestions were highly appreciated by the participants and provided them with direction for future improvements.
- **Tiebreaker Situation**: The competition was intense, and a **tie** occurred between two groups. This added excitement to the event and demonstrated the high level of innovation and effort put into the projects by the students.
- **Prize Winners**:
  - **First Prize**: [Insert group name or project title of the winner]
  - **Tie**: The two groups who tied for second place were [Insert names of the groups or project titles].

Outcome of the Event

- **Award Ceremony**: The event concluded with an award ceremony, where the winners were recognized for their exceptional projects.
- **Feedback from Judges**: The judges praised the creativity and effort shown by all the participants. They provided constructive feedback to all the groups, encouraging them to continue developing their ideas and pursue their interests further.

Conclusion : The Project Expo Event was a great success, showcasing the creativity and ingenuity of students from different schools. The event allowed students to demonstrate their skills and gain valuable feedback from experienced judges. The competition was tight, with a tie between two groups and a deserving winner for the first prize. This event helped foster a spirit of innovation, teamwork, and learning among the participants and provided them with a platform to display their talents.

Robotics Workshop

Objective: To familiarize participants with the fundamentals of robotics, including robot design and programming.

The track featured a combination of straight paths, sharp turns, and intersections, providing a comprehensive test of the line follower robots capabilities. The complexity of the track required participants to employ advanced algorithms and sensors for successful navigation.
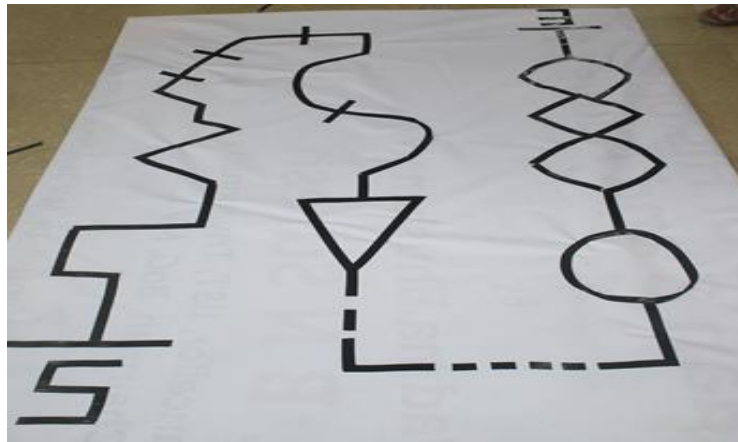

Fig : 5 Line Follower Track

1.   By virtue of this competition, the students gained hands-on experience in the development of line follower Robots.

2.   The students gained sufficient idea regarding how to fine-tune the designs, in terms of compactness, and accuracy.

Here's a simplified workflow for organizing and participating in a line follower:

1. Planning and Design

o Define Rules and Track Layout: Establish the rules of the race, including track dimensions, surface type, and obstacles.

o Design Vehicle: Create a blueprint of the robo car, focusing on the chassis, power supply, sensors, and control systems.

2. Vehicle Construction

o Chassis Assembly: Build the physical frame of the robo car, ensuring it is sturdy and lightweight.

o Sensor Integration: Install sensors like ultrasonic, infrared, or LiDAR to detect the track and obstacles.

o Actuators and Motors: Fit the car with motors and actuators for propulsion and steering.

3. Programming and Testing

o Algorithm Development: Write the code to control the car's movement, navigation, and obstacle avoidance using programming languages such as Python or C++.

o Simulation Testing: Test the algorithms in a simulated environment to identify and fix any issues.

o Field Testing: Run the car on the actual track to fine-tune the software and hardware.

4. Race Day Preparation

o Track Setup: Prepare the race track, ensuring all elements are in place as per the defined rules.

o Vehicle Inspection: Check each robo car for compliance with the competition's specifications.

o Qualifying Runs: Allow participants to conduct trial runs to calibrate their vehicles and make final adjustments.

5. Race Execution

o Starting the Race: Line up the cars at the start line and initiate the race.

o Monitoring: Oversee the race to ensure fair play and adherence to rules.

o Timing and Scoring: Record the times and scores of each vehicle to determine the winners based on speed and accuracy.

6. Post-Race Activities

o Award Ceremony: Recognize the top performers with awards or certificates.

o Feedback Session: Provide constructive feedback to participants and discuss improvements for future races.

Results:

The first place was secured by Chrysalis High, Deekshith kumar, Satvik.S.Reddy, Risthab Nair, Manish Patel awarded with cash prize of Rs 5000/-

.The runners of this competition were fromChrysalis High CHM branch, Stutigupta, Anish Patel awarded with a cash prize of Rs 2500/-

Both the teams were facilitated by Guest and provided certificates. All other participants were awarded with certificate of participation by the judge.

Fig 6: Students from Chrysalis High and MVJ PU College of Engineering

Chatboot:

Introduction

ChatGPT is a conversational artificial intelligence (AI) language model developed by OpenAI. It is part of the GPT (Generative Pre-trained Transformer) family of models, designed to generate human-like text based on a given prompt. By processing vast amounts of textual data, ChatGPT has become one of the most advanced tools in natural language processing (NLP), excelling at tasks ranging from simple question-answering to complex problem-solving, content generation, and even code writing.

This report outlines the key features, capabilities, applications, and limitations of ChatGPT, while also discussing its potential impact on various sectors and industries.

Overview of ChatGPT

Development and Evolution

ChatGPT is built on the GPT-4 architecture, the latest in a series of transformer-based models developed by OpenAI. The development of the GPT series has progressed through multiple iterations:

- **GPT-1** (2018): The first version, with 117 million parameters.
- **GPT-2** (2019): A larger model, with 1.5 billion parameters, capable of generating coherent text across a wide range of topics.
- **GPT-3** (2020): A more advanced model, featuring 175 billion parameters, and a notable leap in language generation abilities, which led to widespread adoption.
- **GPT-4** (2023): The latest iteration, boasting improved accuracy, better understanding of context, and refined capabilities for complex reasoning tasks.

Each version has enhanced its ability to understand and generate natural language, enabling more sophisticated interaction with users.

Key Features and Capabilities

- **Natural Language Understanding**: ChatGPT can process and generate text in a way that mimics human conversation. It can understand nuanced queries, detect context, and engage in coherent dialogue across multiple turns.
- **Context Awareness**: One of the standout features of GPT-4 is its ability to maintain contextual awareness over longer conversations. It can recall earlier parts of a dialogue and adapt its responses accordingly, which allows for more meaningful interactions.
- **Multi-Tasking**: ChatGPT can perform a wide variety of language-based tasks, including answering questions, summarizing text, writing essays, composing poetry, translating languages, creating code, and more.
- **Personalization**: With advanced training techniques, ChatGPT can adapt its tone and style to suit different audiences, whether for casual conversation, technical discussions, or formal writing.
- **Real-Time Learning (Limited)**: While ChatGPT doesn't have real-time learning capabilities in the sense of adapting to new information after training, it can generate

highly relevant answers based on a vast knowledge base up to its training cutoff date (for example, GPT-4 has knowledge until September 2021).

Natural Language Generation (NLG)

At its core, ChatGPT excels at NLG, producing text that is syntactically and semantically appropriate in a wide array of contexts. Whether the task is to provide factual information, create fictional narratives, or generate dialogue, ChatGPT consistently produces text that is fluent and human-like.

Code and Technical Assistance

In addition to language tasks, GPT-4 is adept at writing, debugging, and explaining code in various programming languages, including Python, JavaScript, C++, and more. This makes ChatGPT a valuable tool for developers, learners, and hobbyists alike.

The first prize winner is from MVJ PU College PoluBriti from I PU students awarded with a cash prize of Rs 5000/-

The Runner up from Chrysalis High CHM branch Sai Advik Jaganathan awarded the appreciation Certificate and Cash Prize of Rs 2500/-

All other participants received certificates from Dean Student Affairs Dr Hameem Shanavas,

MsRachana HR department , MVJ PU Principal Bala Krishna and PRO Hari Krishna Hedge.