INTRODUCTION

CLUB OPTIMUS is one of the largest student bodies of Muffakham Jah College of Engineering and Technology. The club deals with the research, development and application of robotics and artificial intelligence. The name “OPTIMUS” Is inspired by Optimus Prime, who is the leader of the Autobots, from the Transformers franchise. Optimus Prime Is one of the earliest robot characters introduced in sci-fi cinema. The club is inspired by his discipline and determination and intends to follow the same. The team participates in national level Robotics Championships and competes with repeated colleges like IITs and NITs. The club also conducts various workshops to impart knowledge on its club members as well as students who want to learn about robotics and artificial intelligence.

OUR VISION

Make bots which are suitable to participate in competitions like Robowars, hosted by NIT, IIT, and BITS etc. Educate ourselves and our juniors about Robotics as it is the phenomenon which will eventually take over, every aspect of the world. Raise the banner of MJCET, both in our city as well as every district we go to for any competition approachable to us.

HIERARCHY AND DESIGNATIONS

Head of department – Dr. Mohammed Viquar Mohinuddin

Faculty advisor – Dr. K. Hema Latha

Chairman – Agha Laiq Hussain MECH 3rd Year

Vice Chair – Supraja Bala EEE 3rd Year

Sofware head - Durga Pavani IT 3rd Year

Sofware vice head - Daniyal shahid EEE 3rd Year

Electrical head - Amaan Shaik EEE 3rd Year

Electrical vice head - Asra Jabeen EEE 3rd Year

Mechanical head - Mohammad Ateequddin MECH 3rd Year

Mechanical vice head- Zainab Tariq AIDS 2nd Year

Technical Head - Arfath Baig EEE 3rd Year

Technical Vice head - Adnan Ahmad Yousuf EEE 2nd Year

Marketing head - Sufyan Ahmed Khan EEE 3rd Year

Documentation Head - Maliha Sumaiyya EEE 3rd Year

Documentation vice head - Ayesha Ibrahim CSE 2nd Year

TIMELINE

September

- Team Optimus changed to CLUB OPTIMUS
- CLUB OPTIMUS was formally recognized by MJCET
- Interviews for senior technical team
- First official meet and allotment of teams
- Project Allotment

November

- Announcement of workshops
- Workshop Marketing
- Obstacle Avoiding workshop
- Bluetooth Module workshop
- Line following Bot workshop
- Maze Solving Bot workshop
- Robotic Arm Mega workshop

December

- Preparation for Roboveda
- Roboveda Tournament
- Junior technical team interviews
- Project Allotment

February

- Allotment of project deadline
- Project review

April

- Project evaluation and assessment

June

- New Governing Body Interviews
- Allotment of New GB
- Official Declaration of designations

INUAGRATION OF THE CLUB

The journey started with a team that was participating and also winning national-level Robotic championships.

And after putting the thoughts into action, this team then transformed into a club. And as goes the famous dialogue of Optimus prime: "There's more than meets the eye", the club was officially started on 03th of August, 2021. Tahami and Muneeb, who were the chair and vice chair of the club for 2021-22 period , carried forward the legacy of their seniors Nayeem and Zeeshan by upgrading their team to a full-blown club.

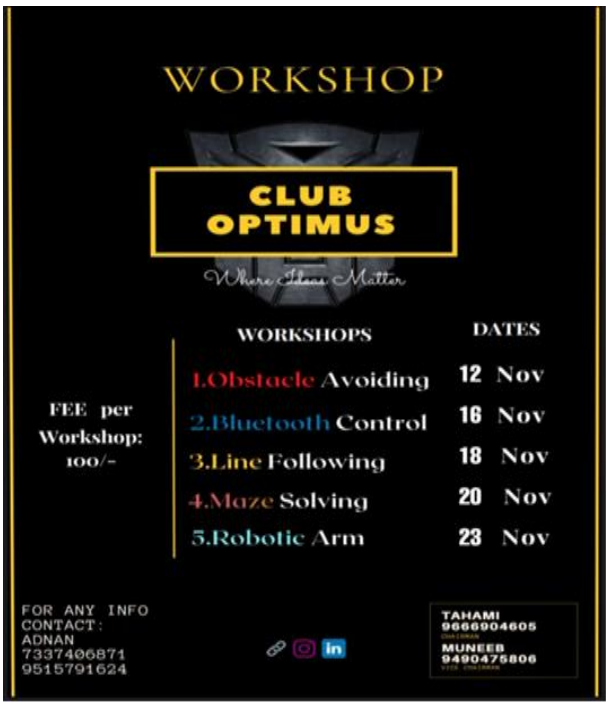
EVENTS AND ACHIEVMENTS

WORKSHOPS

During the month of November, the Club conducted a series of robotics-based workshops for the purpose of familiarizing students with the basics of robotics. The club arranged kits for the students and walked them through the absolute basics of building their own robots. The main objective of the workshops is to impart knowledge about the components, the electrical connections, the software and the assembly of the robots. The 5 workshops the club conducted are

1. Obstacle avoiding
2. Bluetooth control
3. Line following
4. Maze solving
5. Robotic arm

The last workshop was a Mega workshop and was conducted at Ghulam Ahmed Hall



Obstacle Avoiding Bot

This project developed an obstacle avoiding robot to detect and avoid obstacles in its path. The robot is built on the Arduino platform for data processing and its software counterpart helps to communicate with the robot to send parameters for guiding movement. For obstacle detection, three ultrasonic distance sensors were used that provided a wider field of detection. The robot is fully autonomous and after the initial loading of the code, it requires no user intervention during its operation. When placed in an unknown environment with obstacles, it moves while avoiding all obstacles with considerable accuracy. The work done in this project can act as a base for further improvements to increase accuracy and adaptability

Event Gallery

(Insert pictures)

Bluetooth module

The objective of the workshop is to realize smart living, more specifically the home lighting control system using Bluetooth Technology. Nowadays smartphones or android is an open-source operating system which means that any manufacturer on use it in their phones free of charge. A remotely controlled car may be defined as any mobile device which is control by means that it does not restrict it motion with origin external to the device that is the possibility of an existence of a radio control device, a wireless medium between the Remote Mobile and Smart car. A Remote Car is always control by a human operator and it takes no positive action autonomously.

Post Event Report

Event Gallery

(Insert pictures)

Line Following Bot

Robot is a machine that is usually designed to reduce the amount of human work where it is applicable. It is usually developed for reducing the risk factor for human work and increasing the comfort of any worker. High performance, high accuracy, lower labor cost and the ability to work in hazardous places have put robotics in an advantageous position over many other such technologies. In this event a line tracer or follower has been presented which will trace a black line on a white surface or vice-versa. We made use of sensors to achieve this objective. The main component behind this robot is the ATmega328 microcontroller which is the brain of this robot.

Post Event Report

Event Gallery

(Insert pictures)

Maze solving bot

Several maze solving algorithms have been proposed with diverse structure and efficiency. However, here is no perfect maze solving algorithm for this purpose. The deployment of a certain maze solving algorithm depends on several factors including: area size, area complexity, area structure, deployment cost and complexity. During this event, we investigated the maze solving algorithms and categorized them in terms of the deployed maze environment into two categories. In addition, we discussed the recent deployment of maze solving robotic systems and a critical analysis was presented, in order to guide researchers and developers in choosing the most suitable maze solving algorithm.

Post Event Report

Event Gallery

(Insert pictures)

Robotic Arm

Shearing operation is generally conducted manually, but it can be conducted using mechanical, pneumatic and hydraulic means also. Currently, the operation is performed manually at the industry but at a very high risk. In this project, a pick and place machine are designed to lift the raw material sheets one by one to the hearing machine. Suction cups are designed as holders for these machines to hold the metal sheets and place it on the conveyor belt of the shearing machine. This auto feeding mechanism will be operated by the sheet guide. This project undergoes an in-depth study of related topics that are explained in detail in the future sections.

Post Event Report

Event Gallery

(Insert pictures)

ROBOVEDA

ROBOVEDA was a inter college competition held at SREENIDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY.

CLUB OPTIMUS participated in the following events

Name of the Event: **Ranveera**

Date of the Event: 9th December 2021,

Title: Robowars

Position Secured: Runner Up

Around 10 teams participated in conducting the event.

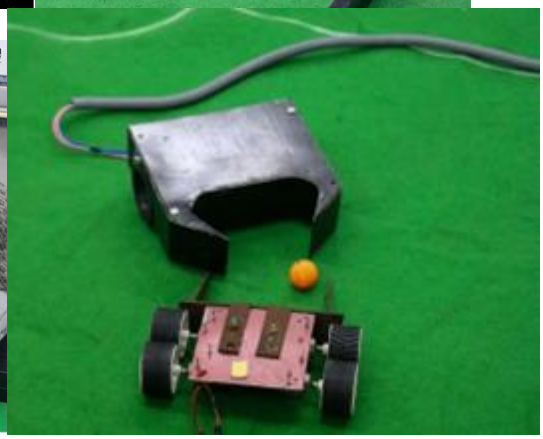
Name of the Event: **Gola**

Date of the Event: 9th December 2021,

Title: Robosoccer

Position Secured: Participation

Around 10 teams participated in conducting the event.



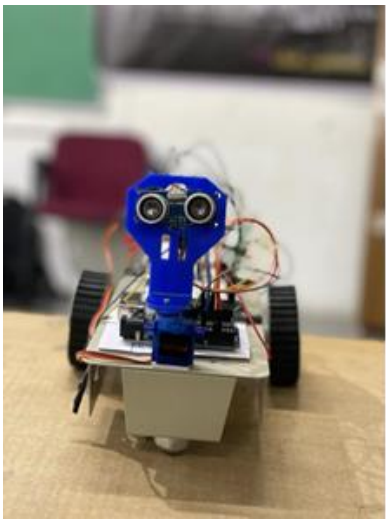
Name of the Event: **Lakshman Rekha**

Date of the Event: 10th December 2021,

Title: Line Following

Position Secured: Participation

Around 10 teams participated in conducting the event.



All the above events were conducted in “ROBOVEDA 21” by Sreenidhi’s Annual Technical Fest from 9th to 12th December 2021.

AWARDS

Club OPTIMUS received 2nd position in the Ranveera Event

(Insert Certificate Photo)

And received certificate of participation in the GOLA and LAXMAN REKHA events

(Insert Certificate Photo)

JUNIOR EXECOM PROJECTS

During the months of February, March and April (with brief periods of break for exams) CLUB OPTIMUS held Interviews for the Jr Execom. The members were divided into groups of 5 members each and allotted a project to work on and their competence, commitment and ability to adapt were evaluated.

The projects allotted to the Jr Execom were

- DRONE
- MARS ROVER
- ANIMATRONIC HAND
- CNC PLOTTER
- ROBOTIC ARM

The teams were allotted Mentors who over saw their progress and guided them throughout their project.

EVENT GALLERY

(Insert Event Photos)