



A COLLABORATION OF ASTROWING MNNIT AND TSAW.



BUILDING ON IMAGINATION



**KICKSTART YOUR
JOURNEY INTO
ROBOTICS**



ABOUT US

Robotics Club MNNIT is a diverse group of robotics enthusiasts from all the college departments, which runs under the umbrella of the Student Activity Centre of MNNIT Allahabad.

Established in 2016, we are mainly concerned with building robots for academic purposes, competing at national events, or even building just out of imagination. This puts us in frequent contact with a plethora of software, hardware, and technologies, like Computer Vision, Simulation Softwares (Gazebo, Pybullet, etc.), CAD Softwares, ROS, devising algorithms, path planning, Machine Learning, Microcontrollers, Kinematics to name just a few of many. Since its creation, this club has seen the completion of hundreds of projects, participated and won accolades in multiple national-level events, and organized various workshops with a decent footfall.

Working closely with the industries, our people regularly acquire lucrative tech giants packages, internships in IITs, and various tech companies.

Our club has also been the birthplace of a startup TSAW in the drone sector, gaining ground in the field and as a company.

We have a team of friendly experts equipped with all kinds of tutorials and workshops along with a compelling workspace to make you an integral part of this rapidly expanding world.

Jigyasa

“Tell me and I forget, teach me and I may remember, involve me and I learn.”

-Benjamin Franklin

Jigyasa is the workshop venture of the Technical clubs of MNNIT, namely Robotics, Aeroclub, and Astrowing, in collaboration with TSAW, a fully functional drone startup that emerged from our clubs. We are motivated by the desire to supplement education with the present-day industry requirements, making the participants future-ready with their skills and a problem-solving mindset.

The workshops under Jigyasa comprise various projects, activities, and interactive sessions, which will help you understand the most difficult concepts in the most comfortable manner. Hence, by emphasizing innovation and imagination, these workshops will instill in your minds a profound scientific temperament and fascination towards technology.

OVERVIEW

“Automation is Voldemort, the terrifying force nobody is willing to name.”

With advent of technologies like cloud and 5G, IoT is no longer just a buzzword. The technology is changing faster than you can imagine, and so are the jobs and market. Whether you are a mechanical engineer or a computer scientist or a biotech, it's simply not sufficient to survive in today's market unless you go interdisciplinary.

This workshop is for the curious you, mesmerised by technology and eager to use the same to build something truly useful and add value to your CV by creating awesome projects.

Our content will kickstart your journey in robotics, thus preparing you to be the leaders of the next industrial revolution.

Prerequisites:

None

Target Audience:

Anyone Interested

WORKSHOP

SCHEDULE

DAY 1:

- WHAT IS ROBOTICS
- COMPONENTS OF A ROBOT- PERCEPTION
PLANNING AND ACTUATION
- ROBOTS vs. MACHINE vs. EMBEDDED SYSTEM
- GETTING STARTED IN ROBOTICS
- ROBOTICS IN INDUSTRY IN 2020
- INTRO TO MICROCONTROLLERS

DAY 3:

- INTRODUCTION TO ML/AI/DATA SCIENCE
- INTRODUCTION TO ML/AI/DATA SCIENCE(CONT.)
- 10 PROJECTS IN ROBOTICS YOU CAN BUILD
FOR YOUR CV
- HOW TO DEVELOP ON SKILLS GAINED:
ASSIGNMENTS AND RESOURCES

DAY 2:

- TECHNOLOGIES IN ROBOTICS: INTRO AND
HOW TO GET STARTED
- ML/DEEP LEARNING/AI
- IMAGE PROCESSING
- ROBOT OPERATING SYSTEM(ROS)
- SIMULATION SOFTWARES(GAZEBO/VREP, etc.)
- ARDUINO/PROTEUS/RASPBERRY PI/JETSON
NANO/ MICROCONTROLLERS
- KNOWLEDGE OF DIFFERENT SENSORS/
MOTORS AND HOW TO WORK WITH THEM
- SOLIDWORKS/CAD/3D PRINTING
- PATH PLANNING AND OTHER ALGORITHMS
USED IN ROBOTICS
- MATHS BEHIND CONTROL OF
HUMANOID ROBOTS/BIPED/QUADRUPED etc
- INTERNET OF THINGS(IoT)
- PYTHON/MATLAB
- CONTROL SYSTEMS

OUR OTHER WORKSHOPS

ASTRONOMY

- Beginner's walkthrough of Astronomy
- Diving Deeper into the Cosmos
- Astronomy from an Engineer's Perspective
- Establishing an Astronomy Club

AEROSPACE

- Introduction to Flight
- A peek into the Aerospace Sector
- Getting Started with Drones
- Drone Automation
- Establishing an Aeroclub in your College
- First step to Aerodynamics with OpenVSP, F360 and Ansys

GENERAL

- Rise and Program
- Think3D: Fundamental of 3D Modelling and 3D Printing
- Learn3D: Introduction to CAD and 3D Printing

ROBOTICS

- Kickstart your journey into Robotics
- Introduction to Artificial Intelligence
- Introduction to Kinematics in Robotics using PyBullet
- Kit-up to Set-up: To Establish a Robotics Club
- Build your own Robot
- Introduction to Simulation Software in Robotics
- Stepping into Electronics and Arduino
- Introduction to Computer Vision with Raspberry Pi
- Introduction to Autonomous Vehicles with CARLA and Imitation Learning
- Internet of Things (IoT)

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