ROBOTICS CLUB
NIT ALLAHABAD

TSAW
Transforming Humanity

A COLLABORATION OF ASTROWING MNNIT AND TSAW.

Jigyasa

BUILDING ON IMAGINATION

THINK3D: FUNDAMENTALS OF 3D MODELLING AND 3D PRINTING

ABOUT US

Robotics Club MNNIT

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

*"Imagination is more important than knowledge.
Knowledge is limited. Imagination encircles the world."*

The ability to visualize in 3D is a crucial skill for budding scientists and engineers, and is a great aid. It also helps them to better understand subjects like math, science and arts, thus making them designers of the future. However, with the books being 2D, the ability of 3D visualization comes with a lot of practice. This workshop on 3D printing will help the participants develop a sound intuition of 3D space and its visualisation; they will learn to make their own 3D models of various objects in an interactive software: TinkerCAD. They will learn to design daily objects, like pens, to something as complex as rockets. We will also be introducing them to industrially used softwares like Fusion 360. We will also be introducing participants to the realm of 3D printing, so that they can design and manufacture their ideas into reality.

Prerequisties:

None

Target Audience:

Class 7th-12th

WORKSHOP SCHEDULE

DAY 1:

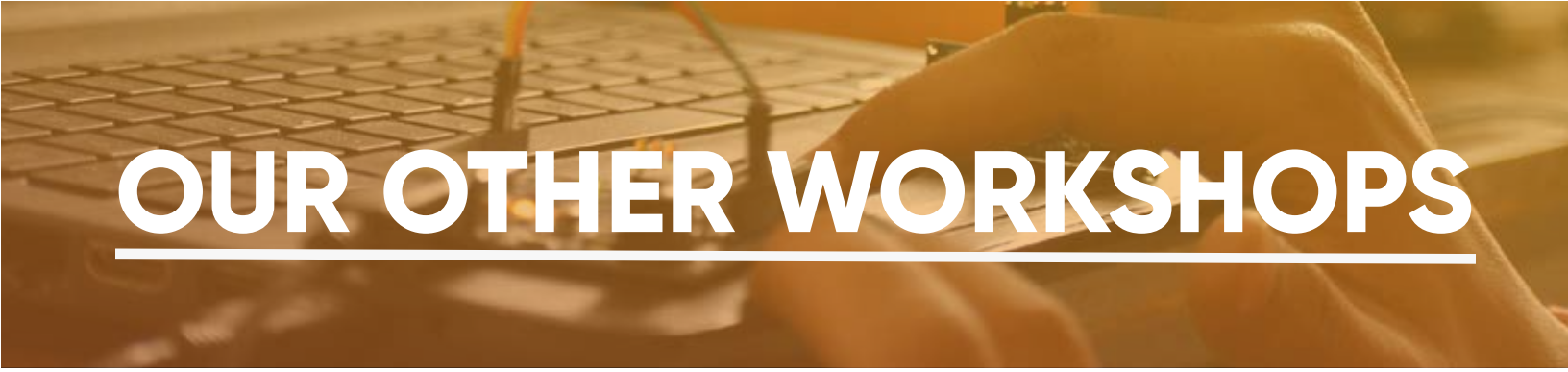
- INTRODUCTION TO 3D DESIGN
- INTRODUCTION TO COMPUTER-AIDED DESIGN(CAD)
- UNDERSTANDING APPLICATIONS OF CAD
- INTRODUCTION TO CAD SOFTWARES - TINKERCAD/FUSION 360/SOLIDWORKS
- UNDERSTANDING TINKERCAD
- GETTING FAMILIAR WITH TINKERCAD
- BASIC DESIGNS IN TINKERCAD
- DESIGNING 3D MODELS OF DAILY LIFE OBJECTS LIKE PENS, BOOKS, ETC
- MAKING COMPLEX MODELS LIKE CLASSROOM AND OFFICE

DAY 2:

- SOME MORE DESIGNS IN TINKERCAD
- MODELLING CAR, PLANE, AND ROCKET IN TINKERCAD
- INTRODUCTION TO FUSION 360/SOLIDWORKS
- SOLIDWORKS VS. TINKERCAD
- SKETCHING IN SOLIDWORKS
- GENERATING 3D MODELS (UNDERSTANDING EXTRUDE, REVOLVE, ETC.)
- SIMULATION IN FUSION 360/SOLIDWORKS (STRESS SIMULATION)

DAY 3:

- INTRODUCTION TO MANUFACTURING AND MANUFACTURING TECHNIQUES
- UNDERSTANDING ADDITIVE AND SUBTRACTIVE MANUFACTURING
- UNDERSTANDING CNC MACHINING
- INTRODUCTION TO 3D PRINTING
- UNDERSTANDING THE WORKING OF 3D PRINTER
- USING THE 3D PRINTER-HOW TO MAKE 3D PRINTS OF YOUR CAD DESIGNS
- SELECTING MATERIAL FOR YOUR DESIGN
- LEARNING FURTHER (OUTCOMES AND RESOURCES)



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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