Jigyasa

BUILDING ON IMAGINATION

INTRODUCTION TO ARTIFICIAL INTELLIGENCE

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

"AI is either likely to be the best or the worst thing to happen to humanity"

- Stephen Hawkings

An amazing ability of pattern recognition is what distinguishes humans from other species, and has led to amazing discoveries throughout history.

But, what if we can make our machines equally good or better at recognising patterns? Such machines will be truly limitless in all senses. That's exactly what artificial intelligence is all about.

Getting started with AI is certainly not a cakewalk, therefore, we are here to introduce you to the field of AI. We will start from scratch and train you up to a level from where you can learn on your own, just like any AI :)

Prerequisties:

None

Target Audience:

Anyone Interested

WORKSHOP SCHEDULE

DAY 1:

- WHAT IS ARTIFICAL INTELLIGENCE (AI)
- WHAT IS MACHINE LEARNING (ML) AND WHAT IS DEEP LEARNING (DL)
- WHAT IS REINFORCEMENT LEARNING (RL)
- AI vs. ML vs. DL vs. RL
- GETTING STARTED WITH ML
- LINEAR AND LOGISTIC REGRESSION
- UNDERSTANDING REGRESSION
- LINEAR AND LOGISTIC REGRESSION
- WRITING CODES FOR LINEAR AND LOGISTIC REGRESSION
- APPLICATION OF CONCEPTS ABOVE

DAY 2:

- INTRODUCTION TO NEURAL NETWORK
- APPLICATIONS OF NEURAL NETWORKS
- UNDERSTANDING A SIMPLE NEURAL NETWORK- THE MATHS INVOLVED
- UNDERSTANDING LOSS FUNCTIONS
- WRITING A SIMPLE NEURAL NETWORK
- WRITING DEEPER NEURAL NETWORKS
- INTRODUCTION TO TENSORFLOW AND KERAS
- INTRODUCTION TO SOFTMAX CLASSIFIER
- INTRO TO SOME MORE CONCEPTS LIKE REGULARISATION
- APPLICATION:BUILDING A CAT/DOG CLASSIFIER

DAY 3:

- LIMITATION OF SIMPLE NEURAL NETWORK
- INTRODUCTION TO CNNs
- NEED OF CNNs OVER SIMPLE NEURAL NETWORK
- WRITING CNNs
- INTRODUCTION TO SOME CLASSICAL CNNs
- CONCEPTS OF REINFORCEMENT LEARNING
- PROJECTS YOU CAN BUILD ON KNOWLEDGE DEVELOPED
- SOME APPLICATIONS OF NETWORKS BUILD/CONCEPTS GAINED TILL NOW IN ROBOTICS
- HOW TO DEVELOP ON SKILLS GAINED: PROJECTS 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

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)

GENERAL

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