

# MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY



01/06/2023  
to  
31/07/2023

## Summer Internship Program 2023 Machine Intelligence and Data Analytics



Organized by:  
Robotics & Machine Analytics (RAMAN) Lab  
Department of Electrical Engineering  
Malaviya National Institute of Technology Jaipur 302017, Rajasthan, India  
[www.mnit.ac.in](http://www.mnit.ac.in), [www.ramanlab.co.in](http://www.ramanlab.co.in)

### About the Internship

The summer internship program (SIP-2023) is designed for understanding and implementing Artificial Intelligence (AI) and Machine Learning (ML) techniques in different fields. The applications of these techniques are quite broad including areas of engineering, business and medicine. With the growing applications of AI/ML, it is important for engineering UG/PG students and faculty to gain a firsthand experience at implementing the AI/ML techniques on different projects. The internship will provide the participants with an in-depth understanding of various AI and ML Techniques and their programming implementation. The interns will be working on different projects that further enhance the realization of these techniques.

### About MNIT

Malaviya National Institute of Technology (MNIT) Jaipur is one of the NITs established by Ministry of Human Resource Development, Government of India. The Institute, earlier known as MREC, was established in 1963 as a joint venture of the state and central Governments. Later in 2002, the college was given the status of National Institute of Technology and on August 15, 2007, proclaimed Institute of National Importance through Act of Parliament. MNIT campus spreads over 325 acres of lush green area in the prime location of Jaipur city. At present, in addition to research, consultancy and developmental activities, the Institute offers UG and PG (M. Tech./M.Sc. & Ph.D.) level courses to about 5000 students in almost all leading fields of engineering, technology, management and sciences.

### Reaching MNIT

Jaipur is well connected by road, rail and air services. MNIT is situated on Jawaharlal Nehru (JLN) Marg and is about 9 kms from Main-railway station/ Central Bus Stand (Sindhi Camp) of Jaipur and 6km away from the Airport.

### Department of Electrical Engineering

The Electrical Engineering Department is one of the oldest departments at MNIT Jaipur. Currently, the department offers undergraduate courses in Electrical Engineering along with postgraduate courses in Power Systems, Power Electronics and Power System Management. The research domains of the department span over various areas of Electrical Engineering. The department continually provides collaborative opportunities with National/International Universities, resulting in a global exposure in research.

### Coordinator

**Prof. Rajesh Kumar**

**Department of EE, MNIT Jaipur**

### General Information

Accommodation and travelling expenses are to be borne by the participants. Limited accommodation on actual charges may be available at MNIT Hostels. A request for hostel accommodation will need to be made in advance. The participant will not be paid any TA/DA. The hostel charges will approximately be Rs 200/day (tentatively). It is to note that limited seats are available in the course (25 seats).

### Important Dates

Last date of registration	24th May, 2023
Confirmation of selection	25th May, 2023
Internship Start Date	1st June, 2023

### Address for Correspondence

**Prof. Rajesh Kumar**

Robotics And Machine Analytics (RAMAN) Lab  
Malaviya National Institute of Technology  
J. L. N. Marg, Jaipur-302017 (Rajasthan)  
Email: [ramanlabmnit@gmail.com](mailto:ramanlabmnit@gmail.com)



## Course Contents

Python: Distributions and IDEs, Packages & Modules, Data Types Python - Variables Lists, tuples, dictionaries, Sets, Files I/O Database Handling Dictionaries, Numpy and Pandas Library for Data Processing Machine Learning Algorithms.

Machine Learning: Regressions, Regularization Classification, Active Learning, Kernels, Support Vector Machines, Model Selection, Boosting, Margin and Complexity, Clustering, Hidden Markov Models, Bayesian Networks, Fuzzy Systems, Design and Applications.

Natural language Processing: Text processing, Language Modelling, Word Embedding, Text Classification, Learning from Social media, Machine Translation and Deep learning for NLP.

Neural Networks, Deep Neural Networks, Convolutional Neural Networks (CNN), Recurrent Neural Networks & LSTM, Generative Adversarial Networks (GANs), Reinforcement Learning, Creating and deploying networks using Tensor flow and Keras.

Case Studies, Projects and Industry practices.

## List of Projects

- Degradation analysis of fuel cells
- Scheduling of autonomous vehicle
- Risk classification of musculoskeletal disorder
- Analyse the brain region activity using fMRI data
- Scheduling of residential loads using optimization
- Development of locomotion policy for biped robot
- Signal processing techniques for biomedical signals
- Thermal comfort classification in residential buildings
- Lower limb abnormality identification using sEMG signal
- Robot pose estimation using brain inspired neural networks
- Biomedical image classification using spiking neural networks
- Learning based uncertainty quantification mechanism for energy storage management

## Internship Application Process

Applications are advised to follow the given instructions while registering for the Summer Internship Program.

### Registration Fees

UG Students	Rs. 20,000/-
PG students/PhD	Rs. 22,000/-
Faculty	Rs. 25,000/-

**Note (I): Including 18% GST in the registration fees.**

**Note (II): If any candidate published a conference paper, the paper registration fees will be borne by RAMAN Lab.**

### Payment Mode

#### Demand Draft:

Demand draft (DD) payable at Jaipur, in name of:

Registrar (Sponsored Research) MNIT

#### NEFT/IMPS:

Name: Registrar (Sponsored Research) MNIT

Account No.: 676801700388

IFSC CODE: ICIC0006768 (ICICI BANK, MNIT)

### Registration Form Details

After fee submission, the applicant must register themselves by submitting details on [Google Form Link](#)

Further details of the internship and instructions for filling the form may be found on [Raman Lab Website](#).

The applicant may also mail the filled registration form (given) with the appropriate requirements to the address of correspondence mentioned.

All registration forms must be received by 24 May, 2023. Registration fee is non-refundable.

The selection for the internship will be on 'first come first served' basis for the limited 25 seats. The confirmation of the selection to attend the course will be emailed by the mentioned date.

For further details about the course, contact [ramanlabmnit@gmail.com](mailto:ramanlabmnit@gmail.com)

## Registration Form

Summer Internship Program on  
*Machine Intelligence and Data Analytics*

**Malaviya National Institute of Technology, Jaipur**

**1st June, 2023 – 31st July, 2023**

Name: .....

Category (UG/PG/Faculty): .....

Semester & Department: .....

Specialization (PG/Faculty): .....

Institute: .....

Mailing Address: .....

Phone (M): .....

(O) .....

Email: .....

Accommodation required?

(Please indicate one: Y/N)

### Registration fee Details:

Mode of payment (DD or NEFT/IMPS):

Transaction No./ DD No.

Amount Paid:

The above information is accurate to the best of my knowledge at the time of completion of the form. If selected, I agree to abide by the rules and regulations of the program and MNIT Jaipur.

Date: \_\_\_\_\_ Candidate's Signature

The applicant is permitted to participate in the above program for the mentioned duration.

Date: \_\_\_\_\_ Signature of HoD with Seal



**Scan for Registration Form**