

# Workshop on Machine Learning, Linear Algebra and Natural Language Transformation (MANTRA-2026) IIIT Allahabad

## Workshop Program Schedule (July 20-22, 2026)

**Day 1: July 20, 2026 (Monday)**

| INAUGURAL SESSION                       |                                                                                                                                          |                                                                                                                                                                |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 09:45 - 09:50                           | Welcome note from Dr. Saurabh Verma and Dr. Amit Kumar                                                                                   |                                                                                                                                                                |
| 09:50 - 10:00                           | Address by Prof. Manish Kumar<br>HoD, Dept. of Information Technology<br>&<br>Dr. Srijit Bhattacharjee<br>HoD, Dept. of Applied Sciences |                                                                                                                                                                |
| 10:00 - 10:10                           | Address by Guests of Honor: Prof. Tapobrata Lahiri and Dr. Sumit K. Upadhyay                                                             |                                                                                                                                                                |
| 10:10 - 10:20                           | TEA and SNACKS                                                                                                                           |                                                                                                                                                                |
| MORNING SESSION: LECTURES               |                                                                                                                                          |                                                                                                                                                                |
| Chair Person: Dr. Amit Kumar            |                                                                                                                                          |                                                                                                                                                                |
| Time                                    | Speaker                                                                                                                                  | Topics                                                                                                                                                         |
| 10:20 - 11:55                           | Dr. Saurabh Verma<br>(IIIT Allahabad)                                                                                                    | Vector spaces and linear transformations; Matrix operations and basic matrix algebra; Matrix decompositions; Eigenvalues, eigenvectors, and their application. |
| 12:00 - 13:00                           | Dr. Anshul Prajapati<br>(Max Planck Institutes, Germany)                                                                                 | Eigenvalues, Stability and Distance Problem in Linear Algebra.                                                                                                 |
| AFTERNOON SESSION: LECTURE and TUTORIAL |                                                                                                                                          |                                                                                                                                                                |
| Chair Person: Dr. Saurabh Verma         |                                                                                                                                          |                                                                                                                                                                |
| 15:00 - 16:30                           | Dr. Shiv Ram Dubey<br>(IIIT Allahabad)                                                                                                   | Introduction to Machine Learning                                                                                                                               |
| 16:30 - 17:30                           | Ms. Ekta Agrawal & Mr. Hemant Kumar<br>(IIIT Allahabad)                                                                                  | Tutorial on Linear Algebra                                                                                                                                     |

**Day 2: July 21, 2026 (Tuesday)**

| MORNING SESSION: LECTURE and TUTORIAL   |                                            |                                                                                |
|-----------------------------------------|--------------------------------------------|--------------------------------------------------------------------------------|
| Chair Person: Dr. Upendra Kumar         |                                            |                                                                                |
| Time                                    | Speaker                                    | Topics                                                                         |
| 10:00 - 11:25                           | Dr Gopendra<br>(NIT Jalandhar)             | Graph Neural Networks (GNNs) for NLP                                           |
| 11:30 - 13:00                           | Dr. Mohammad Javed<br>(IIIT Allahabad)     | Linear Algebra with applications to computer vision                            |
| AFTERNOON SESSION: LECTURE and TUTORIAL |                                            |                                                                                |
| Chair Person: Dr. Amit Kumar            |                                            |                                                                                |
| 15:00 - 16:00                           | Prof. Syed Abbas (IIT Mandi)               | Stability Theory                                                               |
| 16:00 - 17:00                           | Prof. Tapobrata Lahiri<br>(IIIT Allahabad) | The concept of integrated data geography as a new systems engineering approach |

**Day 3: July 22, 2026 (Wednesday)**

| MORNING SESSION: LECTURE and TUTORIAL   |                                                                                              |                                                                                                                              |
|-----------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Chair Person: Dr. Nabajyoti Mazumdar    |                                                                                              |                                                                                                                              |
| Time                                    | Speaker                                                                                      | Topics                                                                                                                       |
| 10:00 - 11:30                           | Dr. Rajesh Kumar Mundotiya<br>(IIT Bhilai)                                                   | Word embeddings and vector representations; Foundations of sequence models and an introduction to Transformer architectures. |
| 11:30 - 13:00                           | Dr. Ankit Kumar Jaiswal<br>(Jawaharlal Nehru University)                                     | Prompt engineering and Generative AI                                                                                         |
| AFTERNOON SESSION: LECTURE and TUTORIAL |                                                                                              |                                                                                                                              |
| Chair Person: Dr. Saurabh Verma         |                                                                                              |                                                                                                                              |
| 15:00 - 16:00                           | Dr. Deepika Gupta<br>(IIIT Vadodara-ICD)                                                     | Retrieval-Augmented Generation (RAG): Foundations, Architectures, and Emerging Trends in Knowledge-Driven AI                 |
| 16:00 - 17:30                           | Dr. Amit Kumar<br>(IIIT Allahabad)                                                           | From LLMs to Multimodal AI: Beyond Text                                                                                      |
| 17:30 - 17:50                           | Guest of honor: Prof. Shekhar Verma, IQAC<br>Distribution of Certificates and Vote of Thanks |                                                                                                                              |