ABOUT THE WORKSHOP

This workshop will focus on problem-driven AI paradigm, where real-world challenges define the choice of algorithms, models, and system architectures. The workshop emphasizes hands-on experience with end-to-end AI solution frameworks, covering problem formulation, data understanding, model selection, evaluation, deployment, and decision support. The course integrates Artificial Intelligence and Deep Learning for real-world applications in healthcare, autonomous systems, smart infrastructure, and decision-making. Participants will gain conceptual clarity in designing scalable, explainable, and efficient AI solutions.

COURSE OBJECTIVE

- Develop a problem-first mindset for applying AI and Deep Learning to real-world scenarios.
- Understand the foundations of AI, including machine learning paradigms, optimization principles, and decision-making models.
- Learn deep learning fundamentals, including neural networks, backpropagation, and gradient-based optimization.
- Explore modern architectures such as CNNs, RNNs, Transformers, and generative models within practical solution pipelines.
- Applications in computer vision and natural language processing, with practical implementations.
- Analyze how to select appropriate AI/DL models (classical ML vs deep models) based on data, constraints, and application needs.

COURSE CONTENT

1. Problem-Driven AI and Solution Design: Real-world problem formulation, constraints, and mapping to AI/ML/DL approaches.

2. Foundations of Artificial Intelligence and Machine Learning: Learning paradigms, feature engineering, and classical ML models in practice.

3. Deep Learning Fundamentals: Neural networks, training dynamics, generalization, and applicability.

4. Optimization and Training Techniques: Highlight the role of Gradient-based optimization, adaptive methods, and convergence issues.

5. Convolutional Neural Networks for Vision Applications: Explain CNN architectures and real-world visual intelligence pipelines.

6. Sequential and Contextual Modelling: Cover sequence modelling techniques using RNNs and the role of transformers in attention mechanisms.

7. Explainability, Evaluation, and Deployment: Explain model interpretability, performance evaluation, and deployment challenges.

AI Impact Summit 2026- Pre Summit Activity

Department of Computer Science and Engineering

National Institute of Technology Rourkela

Online Workshop on

Problem-Driven AI: Real-World Applications and Solution Frameworks

NO Registration Fee

(Full Online Mode)

7th–16th February 2026

Chairman

Prof. Bibhudutta Sahoo, HoD (CS)

Convener

Dr. Anup Nandy

Dr. Ratnakar dash

Register Here:

ABOUT NIT ROURKELA

National Institute of Technology (NIT) Rourkela is an institution of national importance funded by the Ministry of Education. NIT Rourkela was established as Regional Engineering College (REC) on August 15, 1961. In India, it was ranked 13th among engineering colleges by the National Institutional Ranking Framework (NIRF) in 2025. For details about the institute, please visit us at www.nitrkl.ac.in.

ABOUT DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Department of Computer Science & Engineering, NIT Rourkela, was established in 1982. Since its inception, the Department has been under dynamic progress and has been able to develop a reputation for imparting quality education both in undergraduate and graduate programs. The department also offers Ph. D. for regular and sponsored candidates. Please visit https://website.nitrkl.ac.in/CS/ to learn more about the Department of CSE. The department has well-equipped modern laboratories such as Software Engineering, Distributed Object Systems, Information Security & Data Communication, Image Processing & Cluster Computing and Advanced Database Engineering Labs for pursuing research while keeping in view of technological advancement.

TARGET PARTICIPANTS

This workshop is intended for UG/PG students, research scholars, faculty members, and industry professionals interested in applying AI and Deep Learning to real-world problems. Participants from Computer Science, Electronics, Electrical Engineering, and related disciplines will particularly benefit from the course's problem-driven, application-oriented approach.

IMPORTANT DATES

Registration Starts	**04th February 2026**
Registration Ends	**06th February 2026**
Course Schedule	**07th-16th February 2026**
Schedule Time	**6 pm – 8 pm**

PREREQUISITES

1. Basics of programming language and data structure will be a plus.

TOURIST PLACES NEARBY

Khandadhar Waterfall

Pitamahal Dam

Vedvyas Temple

Mandira Dam

REGISTRATION FORM

To complete the online registration, the participants need to fill the following google form:
https://forms.gle/ttXwR8sQUEQJzvLcA

REGISTRATION FEE

There is no registration fee for participation in this workshop. However, prior registration is mandatory.

CERTIFICATE

Participants who attend the workshop and successfully satisfy the attendance and evaluation criteria will be awarded a Certificate of Participation.

COMMITTEE

Patron	Prof. K. Umamaheswar Rao, Director, NIT Rourkela
Chairman	Prof. Bibhudatta Sahoo
Convener	Dr. Anup Nandy Dr. Ratnakar Dash
Speaker	Prof. Bibhudatta Sahoo Dr. Anup Nandy Dr. Ratnakar Dash Dr. Prasenjit Dey Dr. Panthadeep Bhattacharjee Dr. Sibarama Panigrahi Dr. Ramesh Kumar Mohapatra Dr. Dev Narayan Yadav Dr. Tapas Kumar Mishra Dr. Suchismita Chinara

Correspondence
Dr. Anup Nandy
Associate Professor & Convener
CS Department, NIT Rourkela, Odisha, India-769 008.

STUDENT COORDINATORS
Mr. Mainak Ghosh
Phone: 6291011757
E-mail: mainakcgeccse@gmail.com