



This short-term course is designed to provide participants with a comprehensive understanding of how advanced machine learning techniques can be harnessed to address critical challenges in the realm of sustainability. This course offers a rigorous academic exploration of the complexities, strengths, and benefits of utilizing Machine Learning in sustainable technology applications (like as Electric Mobility, Energy Management in Renewable Sources, Cyber-Physical System, Health Monitoring of Batteries, Waste Management, Biomedical Signal Processing, Agricultural Yield Prediction etc.). Participants will grapple with the intricacies of environmental data, honing their skills in preprocessing and modeling to derive actionable insights from complex datasets. While navigating the ethical dimensions of AI, they will learn to mitigate biases and ensure fairness in algorithmic decision-making. The course empowers participants with the knowledge and practical skills required to optimize renewable energy systems, predict resource consumption trends, and enhance resource allocation efficiency, ultimately contributing to a more sustainable and responsible technological landscape. Through a blend of theoretical insights and hands-on applications, participants emerge equipped to lead in the development and implementation of eco-conscious technologies. The course is applicable for students, researchers, and engineering professionals who want to do research in fast growing and emerging renewable energy technology.

Course Coverage:

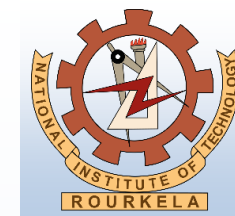
- ❖ Climate Modeling and Generative AI: Predicting and Adapting to Environmental Changes
- ❖ Robustness analysis in Sustainable technology
- ❖ Utilize ML to forecast and optimize energy consumption.
- ❖ ML Applications for Sustainable Health Infrastructure
- ❖ Leveraging Machine Learning in Sustainable Technologies for Efficient Waste Management
- ❖ Manage energy grids efficiently through machine learning techniques.
- ❖ Maximize solar panel efficiency with ML-driven analysis.
- ❖ Explore ML applications in precision agriculture and resource optimization.
- ❖ Multi-Agent based Cyber-Physical System
- ❖ Electric Mobility for Sustainable Development using AI
- ❖ Online Health Monitoring of Rechargeable Batteries based on Artificial Neural Network

Lab Sessions:

- ✓ Use ML to predict Agricultural Yield in presence of impure farm data.
- ✓ Use ML in Sustainable Technologies for Efficient Waste Management.
- ✓ Experimenting with Biomedical Signals using ML and Deep Learning Techniques.

Key Speakers:

- ✚ Dr. Praveen Pankajakshan, VP, DS & AI at Cropin
- ✚ Prof. Tandra Pal, NIT Durgapur
- ✚ Dr. Kaustuv Nag, IIIT Guwahati
- ✚ Dr. Punit Kumar Jain, NIT Rourkela
- ✚ Dr. Shyamapada Mukherjee, NIT Rourkela
- ✚ Dr. Chiranjit Sain, GKCIET Malda
- ✚ Prof. Pravat Kumar Ray, NIT Rourkela
- ✚ Dr. Dipayan Guha, MNIT Allahabad
- ✚ Dr. Prasenjit Dey, NIT Rourkela
- ✚ Dr. Arnab Ghosh, NIT Rourkela
- ✚ Dr. Arijit Guha, NIT Rourkela



**National Institute of Technology
Rourkela**

**Online Mode Short Term Course
& Faculty Development Programme
On**

**Applications of Machine Learning
Techniques in Sustainable
Technologies
(AMLST-2024)**

24th - 28th January 2024

Coordinators

Dr. Prasenjit Dey

Dr. Arnab Ghosh

Prof. Pravat Kumar Ray

Organized By

**Dept. of Computer Science and Engg.
Dept. of Electrical Engineering
National Institute of Technology
Rourkela, Odisha - 769008**

Technically Co-sponsored by:





Introduction:

The integration of Machine Learning (ML) within the domain of Sustainable Technologies presents both a promising avenue and an array of intricate challenges. Foremost among these challenges is the inherent complexity and variability of environmental data, necessitating the development of advanced ML algorithms capable of handling noisy, multidimensional, and context-dependent information. Additionally, ethical concerns such as bias mitigation and fairness in algorithmic decision-making are paramount, ensuring that sustainability efforts remain equitable and unbiased.

Nevertheless, the strengths of ML are profound. Its predictive capabilities enable the optimization of renewable energy systems, prediction of resource consumption trends, and efficient allocation of resources. This translates into tangible benefits, including enhanced energy efficiency, reduced environmental impact, and cost savings. As a dynamic and interdisciplinary field, the application of ML in Sustainable Technologies represents a cogent response to contemporary environmental challenges, leveraging advanced data-driven techniques to foster sustainable practices and responsible technological advancement.

Online Account Details:

Account No: 10138951784

Account Name: CONTINUING EDUCATION
NIT ROURKELA

IFSC No: SBIN0002109

Branch: State Bank of India, NIT Campus
Rourkela

About the Institute:

The course will be organized by the Centre of Excellence on Renewable Energy Systems at the National Institute of Technology (NIT), Rourkela. It is one of the premier national-level institutions for technical education in the country and is funded by the Government of India.

Please visit <https://www.nitrkl.ac.in/>

39 NIRF Overall	16 NIRF Engg.	24 NIRF Research	281-290 QS Asia
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About the Departments:

The department of Computer Science and Engineering is established with the vision to prepare its students for professional employment and graduate education through study and implementation of the fundamental principles of theory, abstraction, and software design. The department offers various UG and PG programmes with the mission to provide high-quality education that prepares the graduates for success in their professional practice.

Please visit <https://website.nitrkl.ac.in/CS/>

The department of Electrical Engineering is established with the vision to design technologies and nurture technologists for diverse and sustainable growth in electrical engineering, leading to wealth and welfare of humanity. The department offers various UG and PG programmes with the mission to develop a platform for forging students as technocrats in line with cutting-edge academic, research and modern industrial practices.

Please visit <https://website.nitrkl.ac.in/EE/>

Online Registration Form:

<https://docs.google.com/forms/d/1ucPtfcSm7t-M9I8MmwNleOyepUH6PJ896aliPtEIUGE>

Registration Details:

Category	Online Registration Fee in INR
Research Scholars/ PG / UG Student	500/-
Faculty from Engineering Institutes	600/-
Engineers from Industry and R&D Organizations	800/-
No registration fee for students / staffs of NIT Rourkela	

Important Dates:

Registration Deadline: 15th January 2024

Short-term Course Date: 24th-28th January 2024

Contact us:

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