

2nd SUMMER SCHOOL
**ADVANCING
SCIENTIFIC
DISCOVERY**

WITH

AI

UNIVERSITÉ DE CAEN NORMANDIE - FRANCE

**JUNE 29
JULY 04
2025**



UNIVERSITÉ
CAEN
NORMANDIE



**INFORMATION
& REGISTRATION**



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ADVANCING SCIENTIFIC DISCOVERY WITH AI

Summer School — June 29 - July 4, 2025

A program to learn and collaborate at the intersection of AI and scientific discovery.

ABOUT THE SUMMER SCHOOL

This summer school provides a platform for researchers and students from diverse scientific backgrounds to delve into Artificial Intelligence and its applications in scientific research. Over five days, participants will explore current techniques, learn from experienced specialists, and collaborate with peers on relevant scientific problems. Each day focuses on a specific application domain and the related AI methodologies. This program aims at exploring the potential of AI to accelerate research and improve our understanding of complex scientific phenomena.

PROGRAM OVERVIEW

Sunday, June 29, 2025 (5:00 PM - 8:00 PM)

Welcome Reception

Participants can attend an evening of networking and introductions. Snacks will be served while participants share their motivations, backgrounds, and AI-related projects with fellow participants and speakers.

Daily Structure

Each day will be structured to facilitate learning and interaction, combining a variety of formats. Expect a blend of:

- Lectures: Comprehensive presentations introducing key concepts and theoretical frameworks.
- Hands-on Practical Sessions: Application of the newly learned AI techniques to concrete scientific problems, in dedicated labs.
- Conferences: Seminars led by specialists in their respective fields.

- Exchange and Discussion Sessions: Engaging discussions to reinforce understanding and explore diverse perspectives, led by a scientific personality.
- Breaks and Free time: Time to recharge and connect with participants and speakers.

Monday, June 30, 2025 (9:00 AM - 7:00 PM)

Theme: AI for Medical Applications

Focus: Medical Image Processing.

AI Foundations: Machine learning and deep learning basics, convolutional neural networks.

Participants will explore how AI algorithms, specifically convolutional neural networks, are used in medical diagnostics and analysis from image processing.

Tuesday, July 1, 2025 (9:00 AM - 7:00 PM)

Theme: AI for Simulation Acceleration

Focus: Accelerating simulations in fields such as astronomy.

AI Foundations: Generative models.

Participants will learn about the potential of generative models in accelerating scientific simulations, exploring their application in high-performance computing.

Wednesday, July 2, 2025

(9:00 AM - 7:00 PM)

Theme: AI for Inverse Problems

Focus: Sensor localization in magnetometry and related fields.

AI Foundations: Physics-inspired neural networks.

Participants will discover the application of physics-inspired neural networks to solve inverse problems, using physical laws to constrain the neural architectures. A part of the afternoon will be dedicated to a social event at the Caen Town Hall.

Thursday, July 3, 2025 (9:00 AM - 7:00 PM)

Theme: AI for Materials Science

Focus: Materials discovery and characterization.

AI Foundations: Uncertainty quantification, Bayesian models. Participants will learn about the use of AI for materials discovery, combining Bayesian methods with deep learning to provide uncertainty in material predictions.

Friday, July 4, 2025 (9:00 AM - 5:00 PM)

Theme: AI for Particle Physics

Focus: Analysis of particle physics data and anomaly detection.

AI Foundations: Deep learning for physics data analysis, anomaly detection. Participants will explore the application of deep learning techniques in particle physics, focusing on data analysis and anomaly detection in large datasets obtained from colliders and telescopes.

APPLICATION PROCESS

Individuals interested in applying should submit the following:

- A letter of motivation explaining your interest in the summer school and how it relates to your research.
- A detailed CV outlining your educational background, skills, and any relevant research experience.

The selection process aims to ensure a diverse group of participants from different scientific fields, with a range of expertise levels.

Please submit your application at <https://ai4science.sciencesconf.org/>

FURTHER INFORMATION

The names of the scientific personalities leading each day and the full list of speakers will be announced shortly.

For further inquiries, please do not hesitate to contact us at

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WE LOOK FORWARD TO RECEIVING YOUR APPLICATION AND WELCOMING YOU TO THIS ENRICHING SUMMER SCHOOL EXPERIENCE !

