

# **IRAP 2025 AI Day**

**mardi 14 octobre 2025 - mercredi 15 octobre 2025**

**Toulouse**

## **Programme Scientifique**

## Brief Summary

We are organising a convivial “IA@IRAP” day dedicated to machine learning and deep learning at IRAP in October 2025. The aim is to offer a general overview of the different approaches, methods and limits of AI applied to physics, presented by one or more AI specialists. There will also be an overview of the use of these methods at IRAP, presented by IRAP members in the form of oral presentations and posters. All are invited to attend, including experts, users and the curious. The current dates are 14, 15 or 16 October 2025.

To help us organise this event (including programming and planning the size of the buffet), please register as soon as possible at this address <https://indico.in2p3.fr/event/36598>, indicating whether you would like to attend as a listener, speaker or poster presenter.

## Introduction

Over the past two decades, machine learning techniques and artificial intelligence (AI) in general have attracted considerable interest in our community. Indeed, increasingly powerful instruments, already operational on current telescopes or those under construction (particularly in various projects led by IRAP), provide and will continue to provide incredible amounts of data, especially in the case of multiple surveys of astrophysical objects. This reality creates an urgent need to implement methods and algorithms capable of exploiting this data, classifying it, analysing it and extracting the underlying physics.

This phenomenon has not escaped our laboratory. Indeed, several members of IRAP have taken a keen interest in these methods, which led to the creation of the IRAP ML/DL group in 2022. During the group's meetings, we noted several points:

- The use of AI covers a wide range of scientific topics represented by the various teams, as well as different machine learning approaches, whether supervised or unsupervised, classification or regression;
- In general, there was a clear need for feedback and interaction between users of these techniques and specialists (mathematicians/data scientists).

AI has become indispensable in our field, both nationally and internationally. We therefore believe it is essential to increase and diversify our group's activities in order to maintain this expertise, exploit it to the fullest and pass it on, while motivating members to invest in it to ensure the project's long-term future. This will increase IRAP's visibility in the field of AI at the national and international levels.

We would therefore like to organise a day to facilitate discussions and feedback between different users. In particular, we plan to invite specialists who can meet the specific needs of our laboratory, particularly with regard to issues related to astrophysical data.

The aim of this day is to bring together as many people as possible working with AI on astrophysical topics and data, and to create momentum around AI applications at IRAP in the fields of astrophysics, measurements and instrumentation.

Confirmed speakers

### Local organising committee

- Jihane Moultaqa, astronomer in high-energy physics and galaxies, IRAP
- Hui Yang, postdoctoral fellow in high-energy astrophysics, IRAP
- Rungployphan Kieokaew, Lead AI and Space Physics engineer, IRAP, Inria.