

Workshop Title:**Explainable AI Planning: A Hands-On Approach to Harvest Planning****Presented by: Dr. Tarek El-Mihoub****Workshop Description**

The hands-on workshop introduces university students to AI-based planning techniques for complex real-world environmental problems, with a strong emphasis on transparency, explainability, and user involvement. Using harvest planning in aquatic environments as a unifying case study, participants will explore how low-level path planning, coverage planning, and high-level optimization problems can be combined into a trustworthy AI planner.

The workshop bridges theory and practice. Students will first gain conceptual understanding of planning problems such as coverage path planning, single-objective path planning, and capacitated vehicle routing problems (CVRP). They will then experiment with these techniques using interactive Google Colab notebooks, enabling them to visualize results, test *what-if* scenarios, and understand how AI decisions change under different constraints.

A central theme of the workshop is Explainable AI (XAI) for planning systems. Participants will learn how transparency, visualization, counterfactual reasoning, and user-driven interaction can increase trust in AI planners, especially in safety- and resource-critical applications such as environmental monitoring and harvesting.

By the end of the workshop, students will have hands-on experience designing, implementing, and interpreting AI planning pipelines, while actively interacting with the planner to explore alternative scenarios and explanations.

Requirements for Participants*Academic Background*

Participants should have:

- Undergraduate-level knowledge in **computer science, AI, data science, or related fields**
- Basic understanding of:
 - Algorithms
 - Graphs and optimization concepts

Technical Requirements

Students must bring:

- A laptop with:
 - Modern web browser (Chrome, Edge, or Firefox)
 - Stable internet connection
- A Google account (for accessing Google Colab)

No Prior Experience in Explainable AI, Path planning, Vehicle routing problems are required, as these topics will be introduced during the workshop.