PhD Program in Plant Sciences – Winter School & Symposium 2025:

Harnessing Machine Learning for Breakthroughs in Plant and Environmental Sciences (5 days, 2 ECTS)

Lecturers:	A lineup of experts
Location:	ETH Zurich Center, tba
Dates:	March 10-14, 2025
Time:	9:00 – 17:00
Credit Points:	2 ECTS
Nr. Participants:	30 / Symposium will be open for public

Winter School Content

Machine Learning (ML), a cutting-edge branch of artificial intelligence (AI), enables computers to learn from data and aid decision-making. In Plant and Environmental Sciences, ML can analyse large datasets, identify patterns, and make predictions to deepen our understanding of biological processes and environmental changes. By leveraging these tools, researchers can uncover new insights and make more informed decisions.

This Winter School offers a unique opportunity to immerse yourself in the latest ML techniques, understand the unique challenges working with Plant and Environmental Sciences datasets and develop strategies on how ML methods and algorithms can address them.

The event is divided into two parts Winter School (March 10-12, 2025) and Symposium (March 13-14, 2025).

The Winter School will offer an intensive three-day program, designed to deepen your knowledge in machine learning and gain practical, hands-on experience. The Winter School features interactive workshops using real-world datasets, complemented by short seminars addressing current technical challenges in analyzing plant and environmental data. Participants will learn how ML can address such challenges with an overview of ML tools and algorithms applied to these fields.
To obtain 2 ECTS, participants in the Winter School are also required to attend the Symposium, which will build on workshop technical learnings as the focus will be applications of ML in Plant and Environmental Siences. **Places are limited to 30 participants.**

The Symposium will focus on ML applications, offering essential insights into methodologies and a broader perspective on how ML can advance our understanding and management of environmental challenges, climate adaptation, biodiversity, and precision agriculture.

Eligibility for Registration

Registration is primarily open to Master's students, Doctoral students and Postdoctoral researchers affiliated with the University of Zurich, ETH Zurich, and the University of Basel. External participants may register if additional places are available.
Participants should have a foundational understanding of programming in R and Python. Completion of the "Introductory Course to Machine Learning for Plant Sciences - Module 1" is recommended. Although the Winter School will start with a brief refresher lecture on ML by Prof. Jan Dirk Wegner, the majority of the program will concentrate on advanced ML methods and challenges in plant and environmental sciences.

Motivation Letter Requirement

As part of the registration process, applicants are required to submit a motivation letter that includes:
- A list and description of previous training and experience with programming and machine learning (duration of training and practical experience).
- An outline of your current research project, highlighting how machine learning may contribute

to your research.

Individual Performance and Assessment

The course is an ungraded semester performance. Students are expected to actively participate throughout the Winter School and Symposium. They will work in teams to solve a designated challenge, demonstrating their understanding of the material. During the Symposium, students will take on leadership roles by chairing sessions and coordinating to ask insightful questions, fostering an engaging and interactive environment.

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