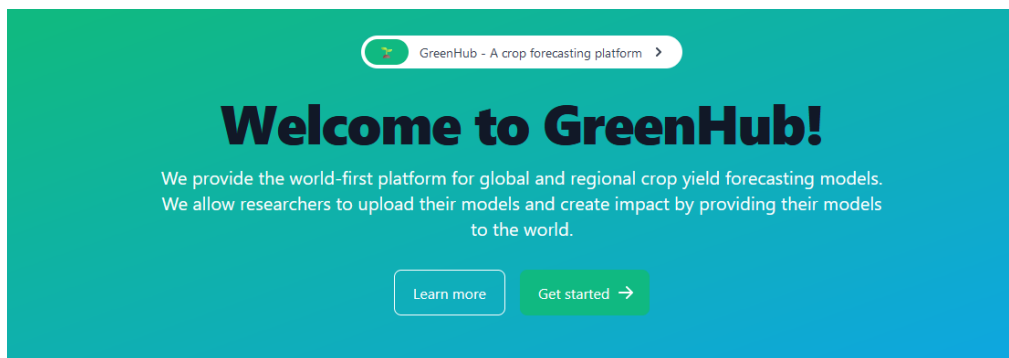


greenhub.ai - Hugging Face for agricultural AI monitoring

IDP for Summer term 2024



COURSE DESCRIPTION

Climate change is expected to reduce global crop production due to intensified droughts and heatwaves. While local crop failures can usually be offset through grain stocks or trade, simultaneous losses across countries are expected to become more commonplace and pose a threat to global food supply. This jeopardizes food security, especially in import-dependent countries. To address this, crop production forecast systems can be used before harvest to allow decision-makers to plan and stabilize food supply with sufficient lead time. These systems use observed features from the crop season's start until the forecast issue date and forecasted features from the forecast issue date to harvest. Observed features usually come from soil, vegetation, and weather data, whereas forecasted features can be provided by seasonal climate models. The existing public and private forecast services lack uncertainty estimation, transparency, and real-time interfaces. To overcome these shortcomings, we developed greenhub.ai during the summer semester of 2023—a specialized Agricultural AI monitoring platform inspired by [Hugging Face](https://huggingface.co).

The IDP of SS 24 will continue developing greenhub.ai to make it the leading science-industry-public crop forecast platform in the world. You will work strongly on a platform approach where machine learning models are hosted from third-party and deployed in production mode.

You will deepen your skills with the following tech stack:

- Machine learning deployment
- Google Cloud (Storage, Firebase, Earth Engine, Compute Engine)
- Angular JS
- Docker
- Third-party code integration and security
- Large-language-models and User information management (ChatGPT, Llama, Textbots)

Furthermore you will acquire domain knowledge related to:

- Agricultural global yield monitoring
- Satellite image processing
- Climate-crop modeling

OVERVIEW

- Duration: 1 April 2024 to 30 March 2025
 - Practical course: 1 April 2024 - 30 September 2024: Practical work; Presentation and final write-up in October 2024)
 - Lecture: 15 October 2024 - 31 March 2025 (or summer 2024 by interest)
- One kick-off lecture about crop yield forecast systems in week 8-12 April 2024
- Weekly/biweekly (remote) meetings to check practical progress
- ECTS: 12
- Deliverables: meeting attendance, final presentation, github access, product demo & writeup

Contact

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Resources

- <https://greenhub.ai/>
- <https://cds.climate.copernicus.eu/cdsapp#!/search?type=dataset>
- [Gro's Predictions for 2022 - How Did We Do?](#)
- [USDA Has a Responsibility to Reveal Crop Yield Forecasting Methods - AFN \(agfundernews.com\)](#)
- <https://www.sciencedirect.com/science/article/abs/pii/S0065211318300944>