

Detecting biodiversity promotion elements in the Swiss agricultural landscape (Msc thesis offer)

The challenge

Many species and habitats owe their existence to agriculture, and their continued existence is dependent upon agricultural management ensuring their protection. Woody structures play an important role as refuges for insects, birds, and other animals.

The Swiss Biodiversity Monitoring ([BDM](#)) and Agricultural Species and Habitats ([ALL-EMA](#)) monitoring programs monitor such biodiversity promotion elements (BPE) across the Swiss agricultural landscape. However, these manual surveys are labours and thus limited to only a small portion of the whole agroecosystem.



Your opportunity

We seek a highly motivated master's student with a good knowledge of computer vision or deep learning and solid programming skills in Python to develop a framework to automatically detect BPEs in the Swiss agricultural landscape. Consequently, your tasks will be:

- Compile geospatial data for training of state-of-the-art deep learning algorithms
- Develop and benchmark an approach for mapping BPEs
- Assessing the spatial distribution of BPEs across the Swiss landscape

As a prerequisite for your work, you can expect several hundred square km of mapped BPEs as training data, very high-resolution remote sensing data from all over Switzerland in a machine learning-ready format. You will have the opportunity to get day-to-day supervised by our experienced computer vision / deep learning expert. To work on this project, you would need to bring:

- Demonstrated hands-on experience in computer vision or deep learning e.g. object detection/semantic segmentation/image classification etc.; experience with geospatial data is of benefit
- A solution-oriented, self-motivated, and organized work ethic
- A cooperative team player personality
- Very good programming skills in Python, experience in Pytorch is a benefit

For more information, please get in touch with Helge Aasen (helge.aasen@agroscope.admin.ch).

Working environment

You would become part of the young and dynamic Earth Observation of Agroecosystems team (www.eoa-team.net) at Agroscope, the Swiss centre of excellence in Agriculture. The proposed **start date is as soon as possible**.

How to apply

If you are interested, please send a short statement of motivation and your project-related experience to Helge Aasen (helge.aasen@agroscope.admin.ch).