

Title: Monitoring biodiversity of agroforestry systems, using multisensor Earth-Observation data and deep learning

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Abstract:

The main objective of the PhD-project is the development of suitable methods for monitoring and assessing biodiversity in agroforestry systems (AFS), e.g., by mapping woody landscape elements and their interaction with neighboring cropland. The project aims on the synergies of various satellite data (e.g. multispectral and SAR with different spatial resolutions) and a potential integration of UAV data. The methods will base on state-of-the-art developments in the field of data analysis and can foster the general use of advanced methods for large remote sensing data sets. These findings can support monitoring compliances, e.g., in context of the EU common agricultural policy, adapting agriculture to climate change and programs regarding the conservation of biodiversity, and the UN Sustainable Development Goals. Furthermore, the results serve as a basis for further investigations on the effect of AFS on yields, carbon storage, and resilience of climate change adopted cropping systems at the landscape scale.

Desired skills of the applicant:

- An above-average university degree (MSc or equivalent) in Geoinformatics, Computer Science or related discipline, ideally focusing on remote sensing
- Sound background in satellite remote sensing
- Programming skills (preferably Python)
- Knowledge in data fusion and machine learning, ideally including deep-learning