Machine Learning for predicting biomass from satellite imagery

Internship location: Agrocampus Ouest, MilPPaT,
UP PSN (Physics and Digital Spatialization)
65 rue de Saint-Brieuc – CS 84215 – 35042 Rennes Cedex – France
(Regular exchanges with IRISA – Rennes)

Context: Agrocampus Ouest has been conducting research for several years in the field of remote sensing data processing for land use monitoring in farming systems. With the arrival of new Sentinel-1 (SAR) and 2 (optical) sensors, image time series are now available free of charge with a high revisit capacity on the same site (temporal resolution of 5 days) and with high spatial and spectral resolutions.
This internship is part of the CASDAR Herdect project, funded by the Ministry of Agriculture, Agri-Food and Forestry, to implement a weekly grass biomass estimation model using remote sensing data to develop an innovative and operational pasture management service.
The objective of the project is to participate in the development and implementation of spatial services for precision agricultural applications.
The internship aims at setting up automated processing and developing algorithms adapted to spatial data analysis.

Activities during the internship
- Remote Sensing data retrieval and preprocessing – automation/optimization
- Preparation of field data – automation of their integration in a database
- Data analysis : evaluation of automatic learning methods
- Development of value-added products (biomass, grass quantity) that can be used to implement a decision-support tool

Required profile and skills
Bac+5 student, engineering school or Master 2 level : the candidate must master the fundamental concepts of image processing and computer programming.
The expected competencies are as follow:
- Programming in Python
- Good knowledge of statistics
- Fluency in scientific English

Duration: 6 months (beginning according to Master constraints)
Remuneration: flat rate (according to the applicable regulations), i.e. about 500€/month
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