ATB
Leibniz-Institut für
Agrartechnik und Bioökonomie

The Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB) as nationally and internationally acting institute is researching at the interface of biological and technical systems. Our research is aimed at sustainable intensification. We analyze, model and evaluate bio-economic production systems. We develop and integrate new technologies and management strategies for a knowledge-based, site-specific production of biomass, and its use for food, as raw materials and fuels - from basic research to application. Thus we are contributing to food security, animal welfare, the holistic use of biomass, and to protect the climate and environment.

For the project I4S – Integrated System for Site-Specific Soil Fertility Management we are looking for a

Scientist in Machine Learning for Proximal Soil Sensing (m/f/d) (90%)

I4S is a joint research project within the scope of the BonaRes initiative funded by the German Federal Ministry of Science and Education (BMBF). I4S develops and integrates several close-range soil sensors for assessing chemical and physical soil parameters related to soil fertility. Information derived from the data of these sensors is used as input for dynamic soil-plant models and a decision support system. The ultimate goal is to help farmers managing within-field heterogeneity of soils in order to improve yields and reduce environmental impacts. In the project a wide range of sensors are used for soil mapping including UV, Vis, NIR, MIR, XRF, LIB, gamma ray, and THz spectrometers which produce a large amount of data in terms of samples (instances) and parameters (features). It is intended to use machine learning to establish calibration models that can predict important soil properties from the readings of these sensors. The scientific challenge consists in the heterogeneity of soil, sensor noise, spatial correlation, and relative low number of reference samples.

Your responsibilities

- Development of robust prediction models that predict soil properties from high-dimensional sensor data
- Variable selection and sensor comparison for simplifying and robustifying the sensor system
- Support of the design of a database for high-dimensional sensor data
- Publication of research outcomes in peer reviewed scientific journals

Your qualifications

- University degree (master/diploma) in the field of computer science, applied mathematics, natural sciences (physics, earth sciences, agronomy, biology etc.) or engineering sciences
- Knowledge of statistical modeling, machine learning,
- Experiences with analyzing spectral datasets from Vis, NIR, MIR, XRF sensors for calibration (chemometrics) would be beneficial
- Programming skills for data analysis with Python, R or Matlab and for data management with SQL
- Basic interest in agriculture, soil science, and senor technology
- Fluent written and spoken English

We offer

- The possibility of PhD graduation
- Work in an interdisciplinary team in an attractive professional environment
- Opportunity for specialisation in a particularly innovative field (Smart Farming, Precision Agriculture, Digital Agriculture)
- Access to national and international networks for your scientific career
- Family-friendly working conditions that foster the compatibility of work and family life

The salary is based on your qualification and professional experience according to TV-L salary group 13. This part-time position (90%) is limited. The vacant job runs until October 2021 and can be extended for another 3 years if the project is extended. For further information please contact **Dr. Robin Gebbers** (phone: 0331/ 56 99 413, e-mail: rgebbers@atb-potsdam.de) and visit our website **www.atb-potsdam.de**.

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If you would like to contribute your professional competence to our interdisciplinary research, please apply by the following deadline **02 February 2020** quoting the **reference number 2020-4-2** by email to **karriere@atb-potsdam.de** (preferably in single pdf-document).

Equality of opportunity is part of our personnel policy. Disabled applicants with adequate qualification will be preferentially considered.

With your application for employment you declare your agreement to store your application documents for at least three months even in case of an unsuccessful candidacy.

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