

OAGM Workshop 2022

Digitalization for Smart Farming and Forestry



vetmeduni

Session 1: October 18, 2022 (online only)

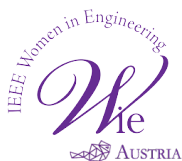
- 15:00 Opening
- 15:10 Keynote Talk: [Ribana Roscher](#)
- 16:10 Break
- 16:20: Spotlights I (10 minutes)
- 17:30: Panel discussion (all presentations)

The attendance of the workshop is free of charge via the following link:

<https://bokuvienna.zoom.us/j/96837019997>

- Meeting-ID: 968 3701 9997
- Mobil:
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Keynote Talk

Generating the unseen and explaining the seen

Ribana Roscher

Abstract

Deep generative models and explainable machine learning are two emerging areas of data science that we can use to address current challenges in agricultural and environmental sciences. Deep generative models are neural networks that are capable of learning complex data distributions. In general, they can be used for a variety of applications, such as anomaly detection, current state estimation, and prediction. Explainable machine learning, which analyzes the decision-making process of machine learning methods in more detail, is used whenever an explanation for the result is required in addition to the result. This can be done for various reasons, e.g., to increase confidence in the outcome or to derive new scientific knowledge that can be inferred from patterns in the decision process of the machine learning model. This talk addresses methods and applications from both areas and how we can take advantage of their combination.

Short Bio

Ribana Roscher is Professor of Remote Sensing at the Institute of Geodesy and Geoinformation at the University of Bonn. She received her PhD in geodesy from the University of Bonn in 2012 and since then has been working on the use of machine learning methods for remote sensing. Until 2015, she was a postdoctoral researcher at the University of Bonn, the Julius Kühn Institute in Siebeldingen, the Freie Universität Berlin, and the Humboldt-Innovation Berlin. In 2015 and 2018, she spent research stays at the Fields Institute, Toronto, Canada, and the UCLA Institute for Pure & Applied Mathematics, Los Angeles, USA. Her research focuses on pattern recognition and machine learning specifically for applications in agricultural and environmental sciences.

Application Spotlight Papers

Novel contactless fingerprint scanner for Legal Enforcement Agencies

Axel Weissenfeld, Erich Voko, Reinhard Schmid, Bernhard Strobl, Bernhard Kohn, and Gustavo Fernandez Dominguez

Crop row detection utilizing spatial CNN modules

Peter Riegler-Nurscher and Leopold Rupp

Influence of Data Processing on Hyperspectral-Based Classification of Managed Permanent Grassland

Viktoria Motsch, Roland Britz, and Andreas Gronauer

A Computer Vision System for Evaluation of Field Robot Operations

Florian Kitzler, Viktoria Motsch, and Andreas Gronauer

Vision-Language Models for Filtering and Clustering Forensic Data

Axel Weissenfeld, Christopher Wimmer, David Weichselbaum, and Martina Tschapka

Estimation of nitrogen yield in wheat using radiative transfer model inversion based on an artificial neural network

Lukas J. Koppensteiner, Reinhard Neugschwandtner, Sebastian Raubitzek, Philipp Weihs, Norbert Barta, Pablo Rischbeck, Thomas Neubauer, Helmut Wagenristl, Andreas Gronauer, and Hans-Peter Kaul

Selection of YOLOX Backbone for Monitoring Sows' Activity in Farrowing Pens with a Possibility of Temporary Crating

Maciej Oczak