ISPRS Technical Commission II <Photogrammetry> Online Talks.

Towards Accurate and Adaptable Earth Intelligence models

Apr/03/2025 (Thu) 10:00-11:00 AM (EST)

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Marc Rußwurm is an Assistant Professor of Machine Learning and Remote Sensing at Wageningen University. His background is in Geodesy and Geoinformation, and he obtained a Ph.D. in Remote Sensing Technology at TU Munich. His research interests lie in investigating the fundamental properties of geographic and remote sensing data to develop new machine-learning methodologies for real-world remote sensing problems.

Abstract of the talk

Intelligent agents must be accurate and adaptable across diverse scenarios and geographic regions. Over the past decade, deep learning models—driven by strong supervision—have surpassed traditional feature-engineering approaches in many remote sensing and Earth observation tasks where labeled data is abundant. Since 2020, self-supervised learning and pre-training have emerged as powerful strategies to leverage vast amounts of unlabeled data effectively. This talk explores the intersection of machine learning and remote sensing, outlining a path toward accurate and adaptable Earth intelligence models. It showcases data-centric machine learning principles applied to critical environmental challenges, such as monitoring marine litter from satellite imagery. Additionally, it introduces learning algorithms designed for adaptable few-shot models. Finally, the talk discusses how general-purpose location encoders can be integrated into pre-trained models, enabling region-aware, calibrated predictions that balance the advantages of global-scale data with regional context.