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Shallow learners are dead – Long live shallow learners! Random Forests in the age of Deep Learning

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May 17, 2024, 14:30 – 16:00
Zoom link: https://bit.ly/40HKCLn

Abstract: The rise of deep neural networks has caused essential changes well beyond the machine learning (ML) and computer vision (CV) communities. One of the consequences is that the previous zoo of used ML methods (e.g., Naive Bayes, MLPs, SVMs, Random Forests, etc.) is now replaced by a near monoculture of (deep) neural networks. Deep Learning (DL) approaches have also been successfully used (and sometimes abused) in Remote Sensing (RS) and Earth Observation (EO). Nevertheless, in contrast to other CV applications, shallow learners (in particular Random Forests) seem to prevail in RS/EO and coexist with DL (although somewhat in the shadow). This talk provides an introduction to Random Forests, discusses modern RFs variations, and positions them into the context of Deep Learning.

Bio: **Ronny Hänsch** received the Diploma in computer science and the Ph.D. degree from the TU Berlin, Berlin, Germany, in 2007 and 2014, respectively. He is a scientist at the Microwave and Radar Institute of the German Aerospace Center (DLR) where he leads the Machine Learning Team in the Signal Processing Group of the SAR Technology Department. He continues to lecture at the TU Berlin in the Computer Vision and Remote Sensing Group. His research interest is computer vision and machine learning with a focus on remote sensing (in particular SAR processing and analysis). He serves as chair of the GRSS Image Analysis and Data Fusion (IADF) technical committee, co-chair of the ISPRS working group on Image Orientation and Fusion, editor of the GRSS eNewsletter, GRSS membership chair, associate editor of the Geoscience and Remote Sensing Letters and the ISPRS Journal of Photogrammetry and Remote Sensing, organizer of the CVPR Workshops EarthVision (2017-2023), Photogrammetric Computer Vision (2019, 2023), and the IGARSS Tutorial on Machine Learning in Remote Sensing (2017-2023). He has extensive experience in organizing remote sensing community competitions, serves as the GRSS representative within SpaceNet, and was the technical lead of the SpaceNet 8 Challenge.

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