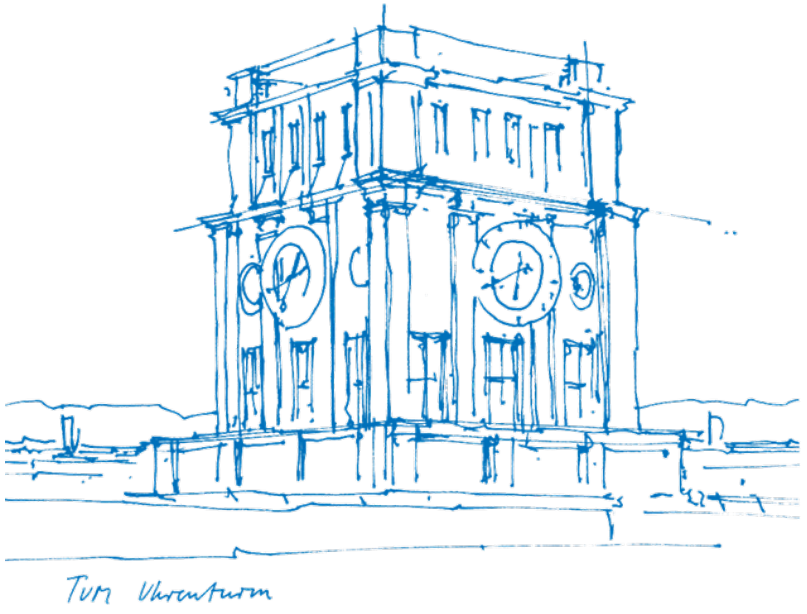
Differentiable Tools for Digital Twin Networks

Jakob Hoydis – IEEE SPS Distinguished Industry Speaker

Technical University of Munich – 21 November 2023

IEEE Signal Processing Society™

GERMANY CHAPTER



SPS Distinguished Industry Speaker Tour 2023

SPEAKER:
Jakob Hoydis
https://research.nvidia.com/person/jakob-hoydis

IEEE SIGNAL PROCESSING SOCIETY:
German Chapter (Chair: Gerald Enzner)

LOCAL HOST:
TUM Chair of Signal Processing Methods (Wolfgang Utschick)
https://www.ce.cit.tum.de/msv

TIME:
21 November 2023, 5 p.m. (Central European Time)

LOCATION:[1]
TUM Main Campus (City Center), Room N1135
https://portal.mytum.de/campus/roomfinder

ZOOM-ACCESS:
https://tum-conf.zoom-x.de/j/69557432719
Passcode: DIST-23-JH

[1] If you would like to attend in person, please let us know at sabine.prucker@tum.de.

JAKOB HOYDIS - DIFFERENTIABLE TOOLS FOR DIGITAL TWIN NETWORKS:

“A possible vision for 6G networks is that they are able to autonomously specialize to the radio environment in which they are deployed. I will discuss two key tools that are required to make this happen, namely differentiable ray tracing for the creation of digital twin networks and machine learning. Differentiable ray tracing allows for gradient based optimization of many scene parameters and enables data-driven calibration of ray tracing models to measurements. Such digital twins can then be used as “gyms” for training of environment specific communication schemes and applications. As examples, I will show how one can learn radio material parameters from channel measurements and present the architecture and performance of a recently developed 5G-compliant neural receiver which is not only compatible with different bandwidth allocations and number of layers, but could possibly be implemented in real-time.“