



Jürgen Döllner

Leitung, Computergrafische Systeme, Hasso-Plattner-Institut, Universität Potsdam, Deutschland

AGIT Keynote* am Mittwoch, 8. Juli 2020, 10:30 im AudiMax

Young Researchers' Corner am Mittwoch, 8. Juli von 13:00 – 14:30 in HS413

""Geospatial Artificial Intelligence: Potentials for 3D Point Clouds""*

"Georäumliche Künstliche Intelligenz: Potentiale für 3D-Punktwolken"

Artificial Intelligence (AI) is changing fundamentally the way how IT solutions are implemented and operated across all application domains, including the geospatial domain. This contribution outlines AI-based techniques for 3D pointclouds and geospatial digital twins as generic components of geospatial AI. First, we briefly reflect on the term "AI" and outline technology developments needed to apply AI to IT solutions, seen from a software engineering perspective. Next, we characterize 3D point clouds as key category of geodata and their role for creating the basis for geospatial digital twins; we explain the feasibility of Machine Learning (ML) and Deep Learning (DL) approaches for 3D point clouds. In particular, we argue that 3D point clouds can be seen as a corpus with similar properties as natural language corpora and formulate a "Naturalness Hypothesis" for 3D point clouds. In the main part, we introduce a workflow for interpreting 3D point clouds based on ML/DL approaches that derive domain-specific and application-specific semantics for 3D point clouds without having to create explicit spatial 3D models or explicit rule sets. Finally, examples are shown how ML/DL enables us to efficiently build and maintain base data for geospatial digital twins such as virtual 3D city models, indoor models, or building information models.

*Keynote auf Englisch

Kurzbiographie

Das Fachgebiet Computergrafische Systeme unter der Leitung von Professor Jürgen Döllner konzentriert sich auf Visual Computing und KI für Geometrie und Geodaten. Seine Forschungsschwerpunkte liegen auf Methoden, Algorithmen, Techniken und Systemen zur Analyse, Verarbeitung und Visualisierung von Software-Repository-Daten (Software Analytics), 3D-Geodaten und 3D-Punktwolken (Geospatial Analytics), visuellen Medien (Video Analytics) und Finance Analytics.

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