Chair of Computational Modeling and Simulation
TUM School of Engineering and Design
Technical University of Munich

Automatic space utilization and activity recognition using point cloud and RGB images

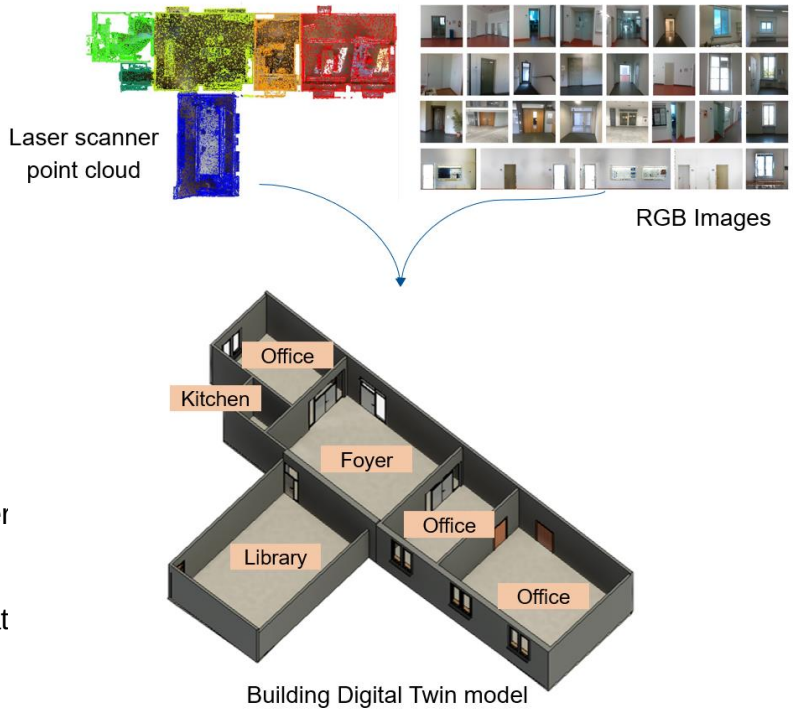
Project Characteristics

Modeling:
Mathematics:
Programming:
Science:

Task

Develop an automated algorithm for recognizing space utilization within the built environment using laser scanner point clouds and RGB images:

- Literature review on valid approaches and AI network architectures for object detection, semantic segmentation and classification on point cloud and image datasets.
- Annotation of point cloud and image datasets required for training AI networks.
- Extract domain knowledge in engineering to establish the rules and information required for classifying spaces based on their utilization.
- Implementation with a prototypical case study (TUM campus) and evaluation of results.



1.Das, Anooshmita & Jens, Krister & Kjaergaard, Mikkel. (2020). Space Utilization and Activity Recognition using 3D Ster Camera inside an Educational Building. 10.1145/3410530.3414318.

2.Cheng, Jieren & Li, Hua & Li, Dengbo & Hua, Shuai & Sheng, Victor. (2023). A Survey on Image Semantic Segmentat Deep Learning Techniques. Computers, Materials & Continua. 74. 1941-1957. 10.32604/cmc.2023.032757.