Chair of Computational Modeling and Simulation
Deparment of Civil, Geo and Environmental Engineering
Technical University of Munich

(Semi-) Automatic Recognition of Infrastructure Objects in a Point Cloud

Project Characteristics

Modeling: ★★★☆☆
Mathematics: ★☆☆☆☆
Programming: ★★★★☆
Science: ★★☆☆☆

Setting:

When renewing or expanding existing infrastructure assets, the current state is needed as the basis for design. The data can be acquired in a point cloud which then needs to be processed and this demands a lot of hours of manual labor.

Your Tasks:

Given are a point cloud and the main centreline (the green line on figure top) of the infrastructure asset. Create a C++ based application:

- Implement and test (semi-) automatic algorithms to extract the objects. These may be reverse engineering or artificial intelligence procedures.
- Recognize individual objects (like masts) and linear objects (like noise barrier).
- Output their location, size, orientation, and semantic meaning.
- Bonus: go for engineering structures (like tunnels and bridges).