

Project title: **Quality Assessment of OpenStreetMap Footpath Data for 3D City Modelling**

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This project assesses the feasibility of creating virtual cities from freely available geodata, with a particular focus on generating footpath networks (e.g. pedestrian walkways, sidewalks and trails).

A key issue in creating 3D representations of geodata is that since individual features will be extruded to give them width, situations may arise where the generated 3D meshes are intersecting.

The primary contribution will be an **investigation into the rate of collision between map features in OpenStreetMap** (OSM), focusing on how often footpaths collide with other features (building footpaths and roads). As part of the pre-study, a program will be developed, which will take an OSM dataset of the Stockholm area and assign each road with standard widths according to Swedish regulation. It will then identify critical areas in the OSM dataset, where the paths are so wide that they collide with existing map features. It will also identify how many of those areas can in theory be corrected by simple translation of the road vertices, without propagation of collision to other features.

The secondary contribution will be an **assessment of the geometrical precision of OSM data** around the Stockholm area. The positional accuracy will be estimated by comparing feature points between the OSM dataset and a reference dataset. The positional accuracy will be needed to assess where road collisions occur and whether they can easily be corrected.

The thesis work will be carried out at the **Embodied Social Agents Lab** (ESAL) at the Department of Computational Science and Technology (CST). The lab has before been working on systems for generating procedural urban environments, and are interested in the possibility of generating more detailed maps than have been done before. The lab is particularly interested in the generation of footpaths, since most commercial software that import road maps only import arterial and secondary car roads, and do not include pedestrian walkways, cycle paths and such smaller roads.