Creating 3D worlds for
human activity recognition in the field of autonomous driving

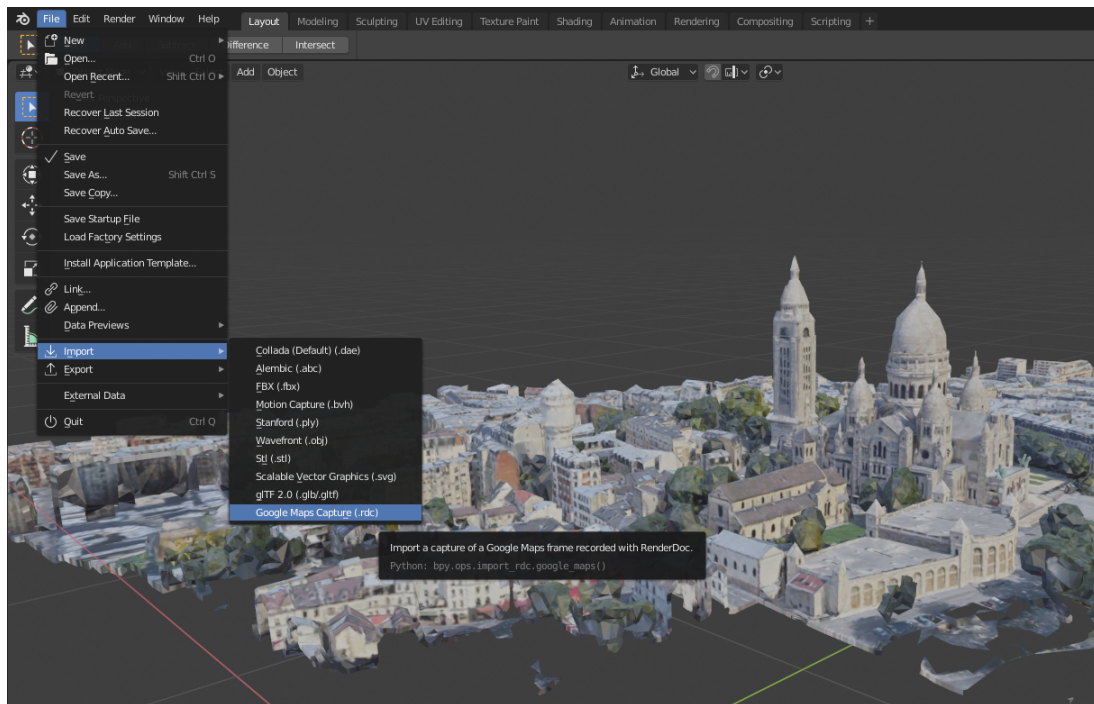## Research Project or Master Thesis

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Figure 1: Screenshot of google maps tiles imported into the Blender rendering engine

The professorship of Digital- and Circuit design (DST) is working in the field of Convolutional Neural Networks (CNNs) for various computer vision tasks. In this context the aim is to generate large-scale datasets for human activity recognition (HAR). For this an outdoor scene can be generated using a google maps plugin for Blender, such as [1]

The major goal of the work should be the creation of multiple scene with a virtual car, which drives through the real-world scenario while rendering modalities such as segmentation masks, depth and optical flow.

The students work isn't limited to this work but should at least contain the following steps:

- Investigation in plugins for importing google maps tiles into blender

- Select various scenes from multiple cities and rural areas

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[1] https://github.com/eliemichel/MapsModelsImporter

- model and place randomly humans, which are performing various activities (use e.g. bvh-files, e.g. from `https://sites.google.com/a/cgspeed.com/cgspeed/motion-capture/the-motionbuilder-friendly-bvh-conversion-release-of-cmus-motion-capture-database`)

- code for the humans performing actions is available within indoor scenes. These needs to be adapted to outdoor scenarios

- evaluation of the results, e.g. comparision to a real-world dataset

Requirements

- basic understanding in computer vision

- at least a 'good' result in Computer Vision I

- good programming skills in Python and Blenders Python-API bpy

Contact Information

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