Hochschule Karlsruhe (HSKA) - University of Applied Sciences

Geomatics **Fakultät IMM**

Kandidat

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Semi-automated generation and visualization analysis of 3D meshes for city models

Referent

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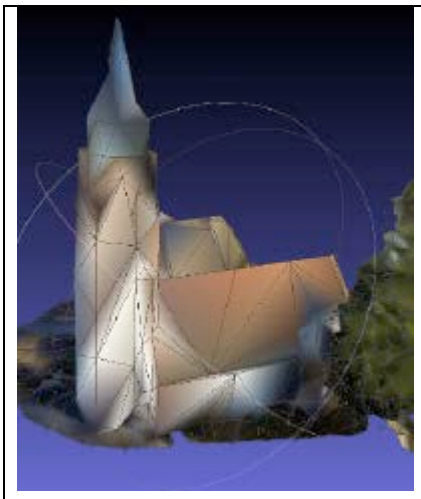
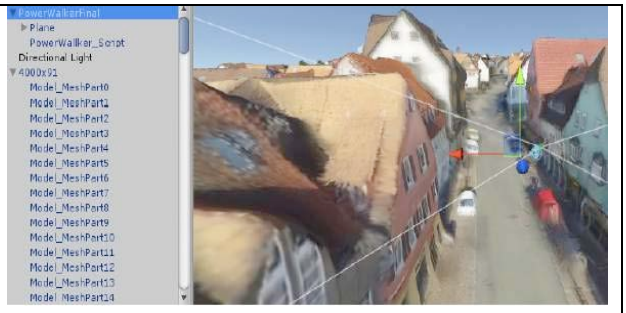
Keywords

3D model, Photogrammetry, Agisoft, Unity3D, Interactivity

Zusammenfassung

The demand for digital city models in various levels of detail has increased considerably within previous years. Such models are intended to be used for visualization and analysis purposes. The point of the matter is which way city models are reconstructed and how much effort is needed. In the area of 3D modeling, anything is possible with a great workload, especially in terms of manual modeling. As this method is very time consuming, an approach of semi-automatization is taken into account which is assessed within the scope of this thesis. The photogrammetric technology in combination with drones enables acquisition of 3-dimensional data based on images.





Oben: **Agisoft model in Unity3D**

Links: **Mesh simplification and parametrization attempt in Meshlab**

The implementation of images as from the generation of a pointcloud until the extraction of a textured 3D model is done with the software Agisoft Photoscan. For a continuation of the data process, diverse other software products are tested and used. The realization for purposes of visualization of the city model using Agisoft Viewer and Autodesk Infraworks, which is done for the town of Dornstetten, covers the basic practical course of action of this paper. Divers workflow failures and errors are analyzed and assessed towards a possible workaround. Due to its sophisticated algorithm regarding computing time and processing quantity, Agisoft is used for the generation of large 3D models. Moreover, high quality output is already utilized in the gaming industry. For the future it can be said, that a high data volume will be much easier to handle due to increasing transfer speed and storage capacity than in the past. Therefore, the field of 3D modeling will gain more interest and demand for purposes of visualization as well as analysis.