



Master Thesis - Efficient Voxel Representations of Textured 3D Surfaces

About Maxar

Maxar Sweden serves the global professional geospatial market with world-leading 3D geodata, 3D visualization solutions, and 3D image processing solutions. We're on a mission to build the Globe in 3D—a revolution in GEOINT tradecraft—that offers decision makers and analysts the entire world in highly accurate, immersive 3D. Maxar's customers are varied and come from the telecommunications, emergency response, defense, and intelligence communities.

We are searching for the best and brightest to join a culture that is open and flexible, inclusive and positive. We offer opportunities for growth and the ability to work with talented people who make a real difference for our clients. Most of our research and development work is done in our Linköping office in Sweden, which employs about 80 engineers who work on cutting-edge technology to produce unparalleled, global, precise 3D geospatial data and software.

The Thesis

The most common representation for textured 3D surfaces is the triangle mesh. While it is a compact and compressible representation that is optimal for real-time rendering using GPUs, it isn't very flexible when it comes to processing and modifying the data.

You will compare different representations of textured 3D surfaces, in particular voxel-based representations which have some benefits over triangle meshes. Key metrics to compare are geometric accuracy, compressibility, file size, read/write performance, and usability.

Qualifications

Master of Science student with an interest in 3D computer graphics, compression, algorithms, and image processing. Experience with open-source software is preferred since you will discover and evaluate existing software in addition to implementing your own.

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