

Runtime optimization of 3D models for mixed reality applications

Type	Bachelor thesis
Workingstitle	Runtime optimization of 3D models for mixed reality applications

Modern mixed reality glasses and future devices are able to superimpose complex three-dimensional structures onto the user's field of vision. The projection and calculation hardware is often built into the headset itself, which enables free movement in space. However, the hardware must also be operated as energy-efficiently as possible, which is a limitation.

The bachelor thesis "Runtime optimization of 3D models for mixed reality applications" aims to integrate existing algorithms for the reduction of polygons in a mixed reality application. The aim is to prevent the frame rate of detailed 3D models from being affected to such an extent that it negatively impacts the user experience. The work will investigate the extent to which reducing the level of detail of a 3D model at runtime can affect both the frame rate and the perceived user experience. The degree to which a reduction of the model makes sense will also be investigated.

As part of the Bachelor's thesis "Runtime optimization of 3D models for mixed reality applications", the student will first examine existing algorithms for the reduction of polygons in mixed reality applications and identify suitable solutions. Subsequently, a prototypical mixed reality application will be created with the designed solution to determine how the reduction of 3D models at runtime affects the quality of the application and the user experience. The aim is to determine the degree to which a model can be meaningfully reduced in order to achieve a positive effect on the frame rate and user experience.

Requirements

- Bachelor's degree in engineering, mechanical engineering, computer science, medical technology, mathematics
- experience with Unity desired
- experience with C# desired
- good knowledge of English required

contact

University of Leipzig

Innovation Center Computer Assisted Surgery (ICCAS)

Ivan Matyash

E-Mail: ivan.matyash@medizin.uni-leipzig.de

Web: www.iccas.de