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## **BACHELOR'S OR MASTER'S THESIS**

### Improving Rendering Speed in Medical Visualization

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Similar to computer games, medical 3D visualizations pose high requirements to resolution, frame rates and image quality. However, often the available hardware is not able to create the aspired images with the necessary speed. Recent solutions to speed up computer game graphics include *Super Resolution* and *Variable Rate Shading* approaches which aim at reduction of the number of computed pixels. The goal of this thesis is to investigate such methods and their ability to speed up medical visualization including direct volume rendering in our image processing and visualization platform MeVisLab as well as on AR/VR headsets and in web-frontends. Hence, the tasks will include:

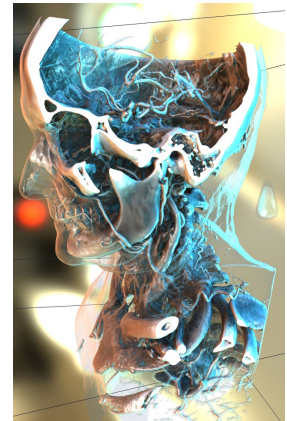
- Exploration of existing super resolution and variable rate shading approaches
- Development of new/improved/adapted approaches
- Integration of suited approaches into MeVisLab
- Consideration of use cases such as streaming to web-frontends or AR/VR headsets

#### **What we expect from you**

- Student of computer science or similar field of study
- Experience in programming (C++, OpenGL, GLSL, DirectX, Vulkan)
- Interest in computer graphics and visualization

#### **What you can expect from us**

- A friendly working environment close to the University of Bremen
- Self-determined work and the freedom to co-create new tasks
- Work within a young and interdisciplinary team of software developers and image processing researchers



Fraunhofer MEVIS is one of the leading global and internationally networked research and development centers for computer assistance in image-based medicine. It follows a patient-centered and workflow-oriented approach to resolve clinically relevant issues in image-based diagnosis and therapy.

For questions regarding this topic, please contact

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