

Geometric Computing Methods for Autonomous Space Navigation

PhD position in geometric computing
with the Computer Graphics and Virtual Reality Lab
at the University of Bremen, Germany,
Salary is according to the German Federal pay scale, TV-L 13, full-time (100%).

Project Description:

The goal of this project is to research and develop novel methods for autonomous navigation that will allow ambitious space missions in the future, and which can also be transferred into terrestrial applications. The overall focus of the project, which involves a number of partners, is on applying the methods of artificial intelligence, sensor fusion, and optimization to space navigation. The project will build on the results of a previous project that laid some groundwork for autonomous space navigation.

The position advertised here, however, will mainly work on the simulation of bi-static radar imaging as well as other geometric 3-D algorithms, such as gravity field simulation and asteroid geometry synthesis. Methods that will probably be needed for these tasks include ray tracing, 3D acceleration data structures, and a good command of C++ and CUDA. Your research can build on previous results achieved in the lab, such as existing codes for sphere packings, bounding volume hierarchies, and virtual testbeds.

About us:

The position offers great opportunities for collaboration with other members of both the computer graphics lab as well as the other project partners (in mathematics, space systems engineering, and others). This job provides a vibrant research environment where a broad range of activities related to space exploration, virtual reality, and virtual medical simulation are being pursued. The successful candidate will be working with a dynamic, friendly, and helpful team of computer graphics researchers. Our research lab is part of the school of computer science at University of Bremen. Our university is a mid-sized university with about 20,000 students, a lot of them from abroad, offering a broad range of fringe benefits such as sports facilities, cultural activities, and daycare.

Qualifications:

Candidates should have an excellent Master's degree or equivalent in computer science, or physics, mathematics, computational engineering, etc. Required skills are solid experience in C++ software development, and a very good command of English (reading/writing/speaking). Ideally, you have some knowledge of radar wave physics, physically-based simulation, you are capable of effectively applying mathematical methods, and you have good knowledge in GPGPU programming. In addition, the successful candidate will be highly self-motivated, passionate about their work, and have good ability to work both independently as well as in a team in a multidisciplinary environment.

Conditions of employment:

As the University of Bremen intends to increase the proportion of female employees in science, women are particularly encouraged to apply. In case of equal personal aptitudes and qualification, disabled persons will be given priority. Applicants with a migration background are welcome.

How to Apply & What to Do in Case of Questions:

Applications should comprise a cover letter, complete CV including any achievements, degree certificates (including list of courses and grades), names and contact details of at least two referees, and other credentials if any (e.g., recommendation letters, publications, etc.). Application by email is preferred. We encourage candidates to apply immediately, but will continue to review applications until the position is filled. If you have any questions about the position, please do not hesitate to address them to the above email address.

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