The Institute of Geodesy und Photogrammetry (IGP) of Technical University Braunschweig is currently offering a research position as **Research Associate (m/f/d)** on

Real-time Global Visual Localisation for Mobile Devices to augment GNSS
(EntgGr. 13 TV-L, 100%)

in the framework of the EU Horizon Europe EGeNiouSS project for 18 months (*extension to at least 3 full years possible and foreseen in cooperation with our partner Austrian Institute of Technology, AIT, Vienna. See below*). We are looking for a Research Associate (m/f/d) as soon as possible.

The IGP and the AIT are partnering within the EU project EGeNiouSS – "EGNSS-based Visual Localisation to enable AAA-PNT in small devices & applications" (https://cordis.europa.eu/project/id/101082128). The overall aim of EGeNiouSS is to augment EGNSS-based localisation and navigation using real-time Visual Localisation. That is, edge devices like smartphones or unmanned aerial vehicles can be unambiguously and accurately localised using ML-based co-registration methods in conjunction with a cloud-based reference database to mitigate well known GNSS issues.

Expectations and task description

Our consortium is looking for ambitious researchers which are passionate about artificial intelligence in Computer Vision and Photogrammetry. In particular, the following tasks describe your work:

- You will work on core components of a visual localisation pipeline for complementing GNSS in difficult sensor environments, e.g. urban areas
- You will focus on long-term stability of state-of-the-art feature/object-based registration.
- You will train and advance ML procedures to enable powerful and robust image-based registration
- You will integrate meaningful and robust crowd-sourcing methods for collecting new data points incl. privacy preservation
- You will build and deploy real-time inference run-times

In a motivation letter you should indicate in how far you are qualified to address those task.

Your profile and our offer

You have an excellent M.Sc degree in Geodesy, Computer Science, Applied Math, Robotics or a related field. Very good programming skills in C++ and/or Python are necessary to implement and test new methods. You demonstrate applied knowledge in DL environments, such as PyTorch, TensorFlow, TensorRT. As a prospective PhD student, you have very good communication and writing skills and you like to work in an international environment. You show willingness to travel and relocate for industrial and academic visits or internships.

Additional assets would be:

- Experience in visual localisation, HD maps or similar
- Experience in working with CityGML
- Experience in embedded programming and/or smartphone integration
- Experience in working with non-standard image geometries
- Experience in ROS and/or GPGPU (OpenCL/CUDA)

Depending on the assignment of tasks and fulfillment of personal requirements, the salary will be up to salary-group 13 TV-L, which is currently approx. 52,000€ per year gross salary. The position is basically suitable for part-time work, but should be filled full-time. For inquiries, please contact Prof. Gerke: 0049/531/391-94570, or by e-mail at m.gerke@tu-bs.de.

The Technical University Braunschweig strives in all areas and positions to reduce underrepresentation as defined by the NHG. Therefore, applications from women are especially welcome. Severely disabled persons are preferred in case of equal aptitude; proof must be enclosed. Applications from people of all nationalities are welcome.

Personal data will be stored for the purposes of the application process. Application costs cannot be reimbursed. Please send your application with motivation letter, CV and certificates (summarized in one PDF file, max. 10MB) by

e-mail to the address below. Applications not containing a motivation letter or with attachments exceeding 10MB will not be further processed. Applications are possible until February 28, 2023,

The employment at TU Braunschweig will be restricted to 18 months duration, however, the tasks above are embedded in multiple working packages of the project and a continuation of work at the AIT in Vienna is strived at, hence an employment of at least 36 months in total is foreseen.

Univ.-Prof. Dr.-Ing. Markus Gerke

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