Student assistant (m/f/d)
Simulation of urban critical infrastructures

The research center emergenCITY aims to improve the resilience of future digital cities. Therefore, we have developed a simulation framework that can be used to analyze the functionality and resilience of our critical, networked infrastructures that we use every day. As part of our "Knowledge Base" mission, we are developing the NEXUS demonstrator (see picture), with which urban infrastructures can be interactively explored, for example in Darmstadt. Currently, we are focusing on the simulation of the electricity and water network, while considering the extension to other systems. Here we want to represent interdependencies and simulate scenarios such as blackouts, floods, storms and other crises.

We are looking for a student research assistant **as soon as possible**, with a planned working time of **40 hours per month** (up for negotiation). The position is initially limited to a period of three months, but we are aiming for a longer-term employment if the candidate suits the position.
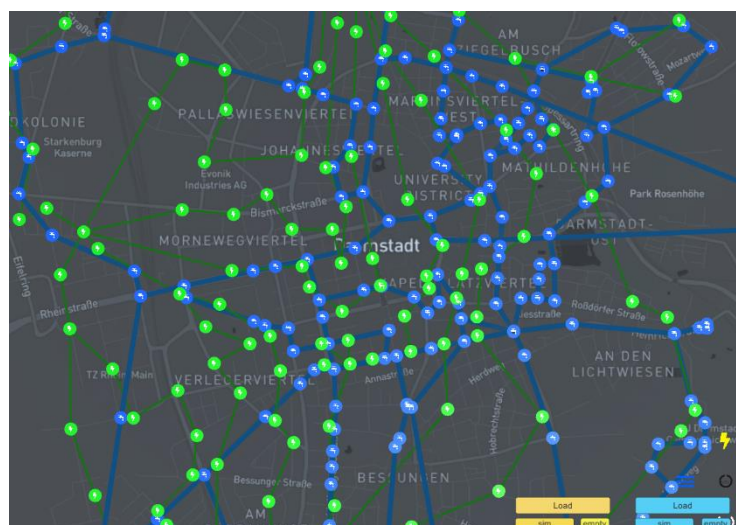
We are a young, interdisciplinary group of researchers looking for technical solutions to increase the resilience of critical infrastructure. The goal of emergenCITY is research on foundations, methods, and solutions for future resilient digital cities. The team is constituted of 30 professors from many institutes of computer science, electrical engineering, mechanical engineering and social science.

Tasks:
- Modeling of urban infrastructures and dependencies
- Further development of a simulation platform in connection with simulators of power and water networks
- Further development of the GUI of the NEXUS demonstrator
- Define and test scenarios with external events
- Evaluation of simulation results, calculation of KPIs/resilience metrics

Requirements (one or more):
- Basic knowledge in energy systems (e.g. VL Energiemanagement und Optimierung)
- Very good programming skills (e.g. Python)
- Experience in working with GitHub & CI/CD
- Experience in Docker
- Experience in Unity (or similar)
- Experience in working with GIS data
- Ability to work in a team

We offer:
- An exciting research project in an interdisciplinary environment
- Flexible working hours
- Possibilities to realize your own ideas into the development

If you are interested, feel free to email us with your CV and transcript of records:

Tobias Gebhard - tobias.gebhard@dlr.de

or

Martin Pietsch - martin.pietsch@eins.tu-darmstadt.de