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

In the research center emergenCITY, we deal with **critical infrastructures in cities**, which we need every day. To analyze the functionality and the resilience of the critical, networked infrastructures, we have developed a **simulation framework**, which can be used in the **NEXUS demonstrator** with a touch interface (see picture) to explore the urban infrastructures interactively, for example in Darmstadt. Currently, we focus on the simulation of the electricity and water network, while considering the extension to other systems. Here we want to represent **interdependencies** between the systems and simulate scenarios such as blackouts, extreme weather, storms, fire and other crises.

We are looking for a student research assistant **as soon as possible**, with a planned working time of **37 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. In our mission "Knowledge Base" we deal with urban data platforms, sensor networks, real-time monitoring and simulation/emulation of interdependent infrastructures.

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

Requirements (one or more):
- o Good programming skills (e.g. Python)
- o Experience in working with GitHub & CI/CD **or**
- o Experience in Docker **or**
- o Experience in Unity (or similar) **or**
- o Experience in working with GIS data
- o Ability to work in a team

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

If you are interested, feel free to email us with your CV, transcript of records and some information about your recent projects/experience:

Tobias Gebhard - tobias.gebhard@dlr.de

Julius von Willich - willich@tk.tu-darmstadt.de