

HiWi Job Opportunity at Lehrstuhl für Informatik 7 (Rechnernetze und Kommunikationssysteme)

DFG Project: Adaptive Quality of Service Provisioning
for Efficient and Resilient Smart Distribution Grids (GE 1053/9-1)

Project Overview

The DFG-funded project **Adaptive Quality of Service Provisioning for an Efficient and Resilient Operation of Smart Distribution Grids (GE 1053/9-1)** is dedicated to advancing the efficiency and resilience of smart distribution grids. By leveraging cutting-edge communication networks, quality of service (QoS) management, and real-time network control, this project addresses critical challenges in the modern energy landscape.

Position Details

Position: HiWi (Student Assistant)

Working Hours: Flexible, adapted to the student's schedule

Start Date: As soon as possible

Location: FAU University, Erlangen

Qualifications

We are seeking a motivated student who meets the following criteria:

- Strong knowledge of **OMNeT++** for network simulation.
- Proficiency in **Python**, especially with the **NetworkX** library.

Pre-Requirement

As part of the application process, candidates are required to complete a practical task that will showcase their technical abilities and suitability for this project. The task is outlined below:

1. Network Configuration:

- Utilize **OMNeT++** to set up a simulated network managed by an **SDN (Software-Defined Networking) Controller**.
- The network should feature edge routers connected to base stations, along with various field devices.

2. SDN Controller Setup:

- Configure the SDN Controller to maintain a comprehensive view of the network infrastructure.
- Integrate the **NetworkX** Python library within the application layer to visualize the network as a dynamic subgraph.

3. Dynamic Network Update:

- Simulate the movement of a field device from the coverage area of one base station to another, each connected to different edge routers.
- The SDN Controller should dynamically update its network information in response to the device's movement.
- Instruct the **NetworkX** library to redraw the subgraph to reflect the updated network topology.

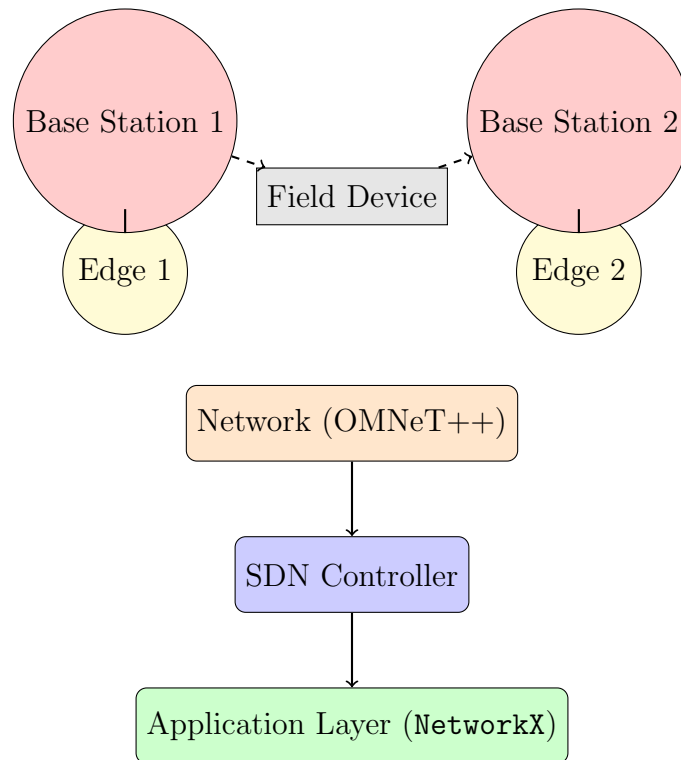


Figure 1: Network setup with SDN Controller and **NetworkX** application layer. The field device moves from Base Station 1 to Base Station 2.

Expected Outcome

The task's successful completion should result in a dynamic, real-time visualization of the network topology using **NetworkX**. The subgraph will be updated automatically to reflect the movement of the field device between base stations, demonstrating your ability to integrate simulation with real-time network management.

Contact Information

For any inquiries regarding the position or the application process, please contact:

- Dr. Abdullah S. Alshra'a,
- Email: Abdullah.alshraa@fau.de

We encourage you to apply promptly, as we are looking to fill this position as soon as possible.