



Student Worker (SHK) Position

We are seeking motivated and talented students to join our team in building a testbed and simulator for smart energy management systems. As part of this role, you will have the opportunity to work on cutting-edge technology and contribute to a project that has the potential to shape the future of smart energy management systems.



Project Descriptions

Our team is engaged in two innovative projects focused on transforming urban mobility and energy management.

1. DymoBat Project

The DymoBat project explores the integration of distributed energy resources (DERs) with bidirectional EV charging to create a resilient and efficient energy distribution system. Through a combination of 5G and AI technologies, this project aims to dynamically optimize energy flow and stabilize grid frequency. Our testbed comprises EVs, charging stations, battery storage, and renewable energy sources to create a sustainable energy system that can adapt to changing demands.

2. Mobilities for EU Project

Mobilities for EU focuses on adapting advanced energy and mobility solutions into real-world urban settings. This project aims to make Dresden a model smart city by implementing 5G-connected solutions, such as bidirectional charging, to improve urban sustainability and reduce carbon emissions. Our team is responsible for designing and testing the simulation environments that demonstrate the impact of these technologies on air quality, noise, and energy efficiency.

Topic: Communication with Bidirectional Charging Station

Tasks / Job Description

- Establish and test a communication link between the bidirectional charging station and the central control system.
- Identify and analyze available data from the charging station, such as charging status and energy flow.
- Test the system's remote control functions, ensuring smooth operation and data exchange.
- Document findings and provide feedback for further integration with the testbed.

Requirements

- Enrolled in Electrical Engineering, Computer Science, or related field.
- Proficient in programming languages, such as Python.
- Self-motivated, capable of independent work and teamwork.
- Experience in communication protocols (e.g., OCPP, MQTT, MODBUS TCP) and energy management basics is a plus.

Starting Date: As soon as possible

Working Hours: Flexible

Keywords: Smart grid, bidirectional charging, EV, energy management, communication protocols

Contact Information:

If you are interested in any of these positions, please contact us at

shiwei.shen@tu-dresden.de

Topic: Simulation and Interface Development

Tasks / Job Description

- Develop simulation models for energy flow, EV state of charge (SoC), and overall charging behaviors.
- Create an interface that visualizes simulation outcomes, demonstrating impacts on energy savings, CO2 emissions, and renewable energy utilization.
- Integrate simulation components for cohesive performance tracking across multiple scenarios.
- Collaborate with the team to refine and validate simulation outputs.

Requirements

- Enrolled in Computer Science, Electrical Engineering, or a related field.
- Proficient in programming languages, such as Python.
- Strong analytical skills and a collaborative mindset.
- Knowledge of data visualization tools or web development is a plus.

Starting Date: As soon as possible

Working Hours: Flexible

Keywords: Simulation, smart grid, EV, 5G, renewable energy, urban sustainability

Contact Information:

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shiwei.shen@tu-dresden.de

Topic: Tool Development for EV Driver Preferences

Tasks / Job Description

- Develop a tool to collect EV driver preferences (SoC targets, planned departure times) for real-time energy management.
- Design an interface that allows drivers to input preferences and receive feedback on optimal charging strategies.
- Collaborate with other team members to ensure the tool integrates smoothly with the overall energy management system.
- Test and refine the tool, ensuring alignment with energy optimization goals.

Requirements

- Enrolled in Computer Science, Electrical Engineering, or a related field.
- Proficient in programming languages, such as Python.
- Understanding of user-centered design principles.
- Interest in sustainable mobility and energy management.

Starting Date: As soon as possible

Working Hours: Flexible

Keywords: EV, driver preferences, energy management, UI design, sustainable mobility

Contact Information:

If you are interested in any of these positions, please contact us at

shiwei.shen@tu-dresden.de