

Master thesis, Bachelor thesis, Project thesis, Internship

AR-based Crane Control | Development of a Simulation Environment

Within the KraNavi research project we develop an AR-based operator assistance system for bridge cranes. Key functions will be verified in simulation first. A dynamic simulation environment will model transport tasks of increasing complexity and include static and dynamic objects. It will enable end-to-end validation of subsystems such as path planning, gesture and speech recognition, collision avoidance, and visualization of transport operations. We also study how synthetic data from simulation can enhance training datasets for recognition algorithms.

Your tasks

According to your interests, we can define the focus of your internship/ Bachelor's/ project/ or Master's thesis. Possible tasks

include:

- Design and implementation of a modular, dynamic simulation environment (e.g., in Unity3D, Gazebo, or similar)
- Modeling of crane, load, and environment objects (static/dynamic)
- Representation of transport tasks with gradually increasing complexity (layouts, obstacles, moving agents)
- Integration and coupling of subsystems (path planning, gesture/speech recognition, collision avoidance, AR/VR visualization) via suitable interfaces
- Validation of defined scenarios, including metrics for safety, efficiency, robustness, and usability-related KPIs
- Generation and evaluation of synthetic data to supplement training and test datasets

Your profile

- You are studying a technical field such as Mechanical Engineering, Mechatronics, Computer Science, or a related discipline.
- You have an interest in AR/VR, robotics, path or trajectory planning, or human-machine interaction.
- You already have knowledge of Python or C#, or are motivated to acquire the necessary skills.
- Good German or English language skills, both written and spoken, are desirable.
- You work independently and in a structured manner.

We offer

- Cutting-edge research topic with high relevance for safety and productivity in crane operations
- Close supervision and technical support from an interdisciplinary team
- Access to modern AR/VR hardware and development environments
- Opportunity to contribute your own architectural decisions and publish results
- Flexible working hours and hybrid work options by arrangement
- Networking opportunities through involvement in industry collaboration



Bitte sende deine aussagekräftige Bewerbung in einer einzigen PDF-Datei an jobs@iph-hannover.de.

Die Bewerbung muss Anschreiben, Lebenslauf sowie Prüfungsleistungen des Studiums / Zeugnisse enthalten.

Contact



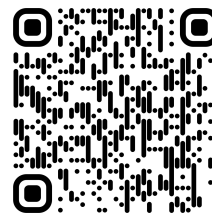
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