Job advertisement: Research assistant (WHK) for modelling and simulation of an aircraft towing system

About the position

In the Intelligent Systems group at inIT, we are working on the modelling and simulation of an autonomous aircraft towing system at airports as part of the AeM Speedport research project. The aim is to develop and validate a dynamic model that is created by a combination of theoretical analysis, numerical simulation and software-supported model validation.

To support the work, we are looking for a student assistant to work up to 19 hours per week with immediate effect.

Tasks

The work is divided into three main phases:

1. Numerical simulation with Python

- Development and implementation of the system model in Python.

- Comparison of different modelling approaches and evaluation of their accuracy.

- Analysis of the effects of different parameters (e.g. mass, center of gravity, friction coefficient) on the system dynamics.

2. validation with MATLAB/Simulink

- implementation of the validated model in MATLAB/Simulink.

- Carrying out simulations to check the accuracy of the model.

- Comparison of the MATLAB/Simulink simulations with the numerical results from Python.

3. experimental tests

- preparation and execution of practical tests to validate the simulation results.

- Analysis of real sensor data and comparison with simulation models.

Requirements

- Degree in computer science, electrical engineering, mechanical engineering, mechatronics or a related field.

- Experience with Python (e.g., NumPy, Matplotlib).

- Knowledge of MATLAB/Simulink.

- Desirable: Experience with ROS2 for simulation-based control.

- Independent and structured way of working and interest in interdisciplinary research.

We offer

- Collaboration in an innovative research project with direct practical relevance.

- Insights into vehicle dynamics and system modeling methods.

- Flexible working hours with the possibility of partial remote work.

- Option to write a Bachelor's/Master's thesis as part of the project.

Application

Please send applications with a **current CV and overview of grades** to:

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