MAITY Space – ESA projects for WERKSTUDENTEN, Bachelor/Master Thesis

17th of October 2025

The following list are potential options for a bachelor/master thesis project, or as a project for a Werkstudent. We are located at the TIZ Darmstadt and have on-going projects with ESA and other customer in the space industry. We have an excellent software development team and a lot of experience to share. If YOU are interested, please write to us on either LinkedIn, or via email (see below) or talk to Prof. Dr. Moore.

MAITY Space' ESA projects

1. Simulation features for LEOP

Duration: 3-6 months
Required skill level: advanced - we suggest a master student

The goal is to implement a simulation framework for conjunction events during LEOP (Launch&EarlyOperationsPhase) phases, which allows generating one or few simulated high-risk conjunctions as well as a realistic number of low-risk conjunctions. The framework shall allow the user to adjust conjunction parameters and assess effects on the collision probabilities for a set of spacecraft trajectories such as nominal, current operational, tentative/planned manoeuvre trajectories before making it available to the operational COLA system.

- Simulate earth rotation and solar activity to shifted time
- Implement workflow to create/update simulated external conjunction screenings
- Prepare setup with simulation instance and simulation control instance

TechStack: [Python, TypeScript, PostgreSQL]

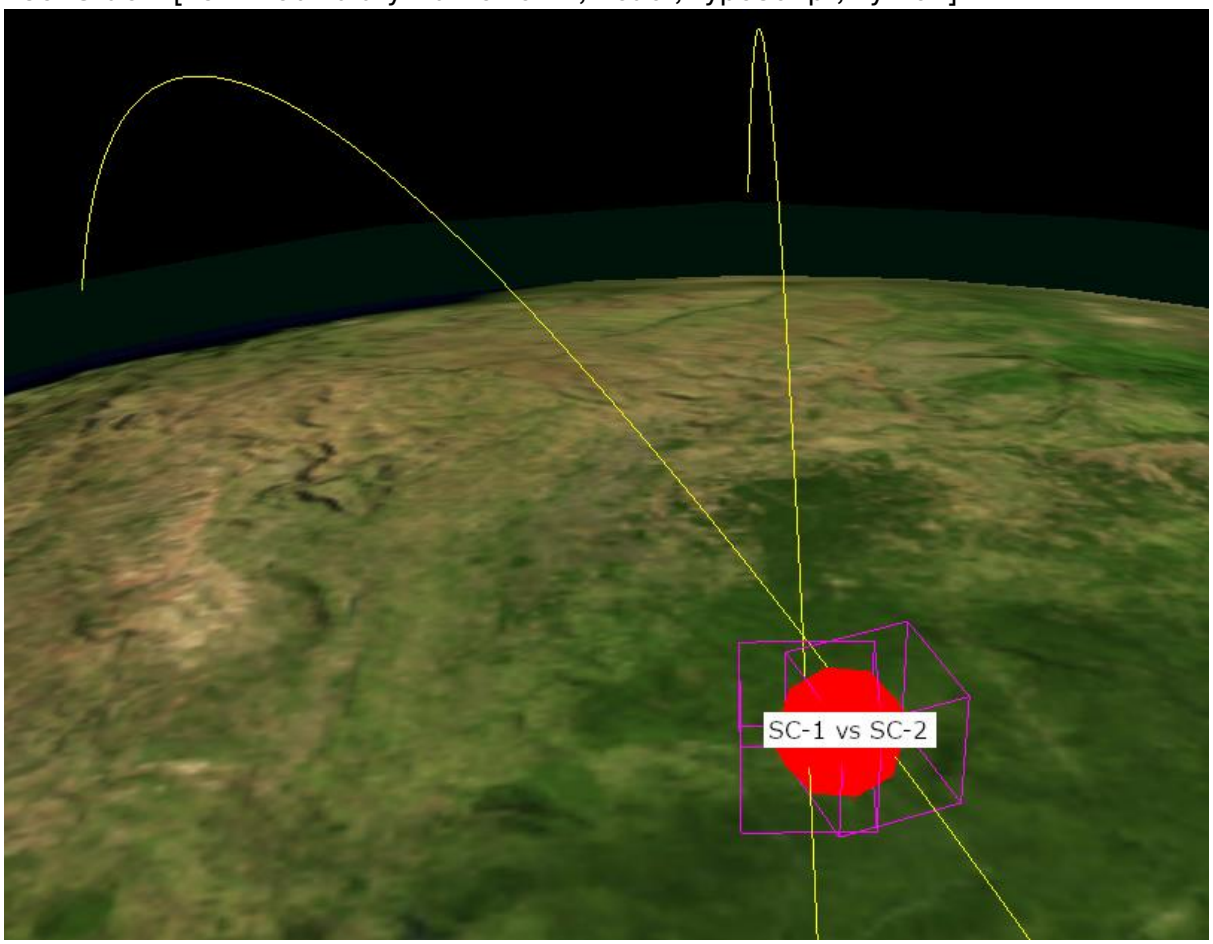
MAITY's Space internal projects

3. Visualization of conjunction geometry

Duration: 3-6 months
Required skill level: mid - we suggest a master student

MAITY requires a way to implement a visual representation for high-risk conjunction events between our mission (the spacecraft) and other objects in space.
The visualization shall be implemented using either Three.js or WebGL (we are also open for other suggestions) and it shall be integrated into MAITY's collision avoidance web service Aegis, which is implemented in React, TypeScript and Python.

TechStack: [<3D Web library/framework>, React, TypeScript, Python]



Here a mock-up of a possible outcome, showing two space crafts (SC-1 vs SC-2) in a close approach.

4. MAITY Space web site / Web UI

Duration: 3-6 months
Required skill level: mid - we suggest a bachelor student

We need to improve our web site. We are adding this option to provide a flexible option, as this project that has no specific requirements and is open to creative ideas. Depending on how skilled you are, we can also think of contributing to the web UI of our Collision Avoidance Service.
TypeScript: [React, TypeScript, Python]

Are you Interested?

Please send us your CV along with a short message on what project you are interested in, as well as the code **FBI@MAITY-Space** and we will contact you soon after.

Email: **application@maity-space.com**

LinkedIn: **https://de.linkedin.com/company/maity-space-gmbh**