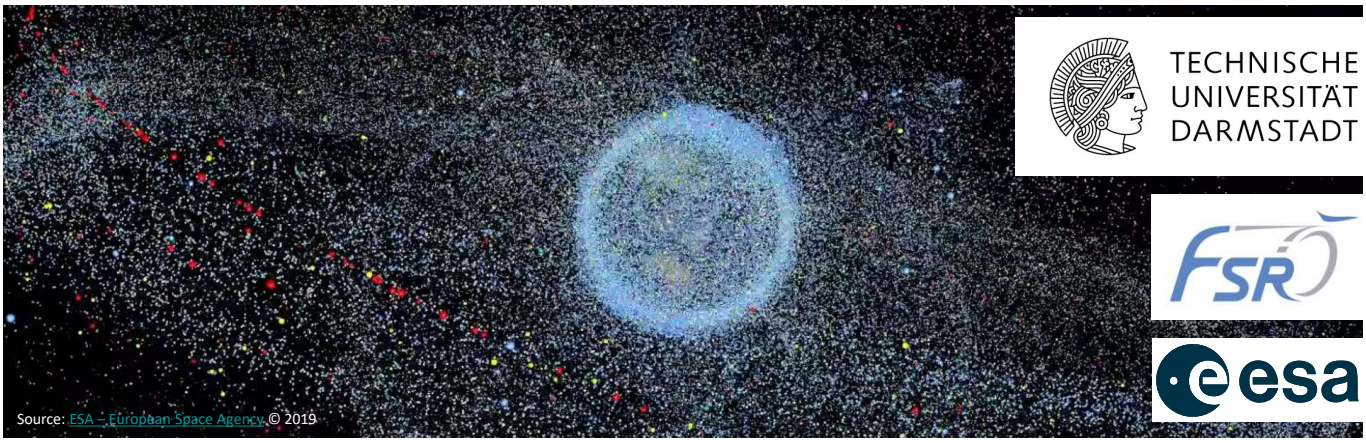


Advanced Design Project

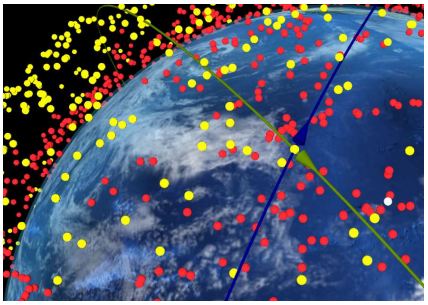
Development of a Performant Web Dashboard Solution for the Visualization of Satellite Mission Analysis Results

Tags: Space Traffic Management, Collision Avoidance, Data Analysis, Software Architecture, Web App, Python

Background:
As part of the ongoing research in the Space Safety domain of FSR, a mission analysis software (MAS) is developed in the CASCADE project. The objective of the web-based MAS is to support actors in the space domain to identify collision risks and to investigate suitable rule sets for the coordination of conjunctions between active satellites. To enable a user-friendly presentation of the results of the MAS, a performant and scalable web dashboard solution shall be developed in the scope of this ADP.

Content:
In this ADP you will:

- Derive requirements from the top-level requirements of the CASCADE project
- Research and compare suitable dashboard solutions compatible with the Python Flask ecosystem by prototypical implementation (database integration, asynchronous loading capabilities, etc.)
- Implement a user-friendly dashboard solution which allows for interactivity, data filtering and export of plots
- Integrate the dashboard solution into the existing MAS Flask web app and connection to the database data points to generate suitable plots
- Test the software that you built
- Verify and validate the requirements



Simulated conjunction detection events (FSR research).

Artistic depiction of a web dashboard (created with AI).

Requirements / Skills:

- Currently enrolled in Master's degree program in Mechanical Engineering, Aero Space, Computational Engineering, Computer Science, Electrical Engineering, Mechatronics or similar
- Prior knowledge in Python, databases and in the use of Git
- Knowledge in web-based development and asynchronous loading is favourable
- Strong interest and enthusiasm for space topics and data analysis

Contact:
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Start:
As soon as possible