

Mission Analysis and Flight Dynamics Software Engineer

Description

WGS is looking for a Mission Analysis and Flight Dynamics Software Engineer.

The purpose of this position is to provide service to the Flight Operations Division at EUMETSAT headquarters in Darmstadt, Germany. (However, some flexibility is allowed for offsite work.)

Responsibilities

Typically, tasks will include:

- Provision of software service for contributing to the maintenance and evolution, including prototyping and development, of Mission Analysis and Flight Dynamics support tools and libraries, including developing solutions to be deployed.
- Providing software service for the maintenance and evolution of mission analysis libraries and tools
- Prototyping of Flight Dynamics specific functions, especially in preparation for future programmes
- Further support to the development, maintenance and evolution of operational systems (e.g. CONANA MME) or other elements or services (e.g. centralized Flight Dynamics dashboard) developed and maintained by operations

Qualifications

The Key Person shall have the following mandatory attributes and skills:

- A university degree in a relevant technical discipline (i.e., flight dynamics engineer, software engineer, computer science etc.) or the equivalent work experience
- Knowledge of the analytical principles for orbit determination and control
- Experience with Environmental Flight Dynamics Models
- Hands-on experience in propagation methods, orbit design and manoeuvre optimization for **LEO and GEO missions**
- Knowledge of application tools and libraries, with special emphasis on Orekit
- Experience in Software engineering and development, including the use of relevant IDE (e.g. VSCode) and source code and version control tools (Git in particular)
- Proven experience in software development with Python in Linux
- A systematic approach to work, including the ability to plan the work and cope with tight schedules and multiple tasks
- Ability to learn and develop the needed skills and knowledge to contribute to the implementation of the service
- Willingness to work within a multidisciplinary context in cooperation with other teams.
- Write accurate and consistent technical documentation.
- Fluent in English (communication and writing skills)

Furthermore, it would be a distinct advantage for the key person to have experience with some of the following:

Hiring organization

WGS Workgroup Solutions GmbH

Employment Type

Full-time

Job Location

Darmstadt

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For Mission Analysis and Flight Dynamics Environment models, knowledge of:

- Rotation and reference systems (IAU, IERS)
- Planetary ephemeris (JPL or analytical/astronomical almanac)
- Force models for Flight Dynamics and Mission Analysis applications
- Signal transmission models
- Applicable standards (i.e. ECSS, ISO and CCSDS)

For propagation methods and orbit design for LEO and GEO missions, the experience of:

- Numerical propagation with perturbation forces
- Analytical or semi-analytical approximations, including TLEs and use of SGP4
- Orbit design for Earth Observation LEO satellites (sun-synchronous)
- Orbit design for Earth Observation GEO satellites (geo-synchronous)
- Constellation design (such as to fulfil revisiting or Earth coverage requirements)
- Orbit acquisition and tandem formation at the LEO regime
- Orbit acquisition at GEO regime, and in particular based on GTO (GEO Transfer Orbit)
- Orbit determination (radio-tracking, GNSS-based, with pointing information)
- Orbit control (station-keeping techniques for LEO & GEO satellites), including manoeuvre optimization and co-location
- Disposal design for LEO (re-entry to the target area, or to 25-year decay orbit, or not to re-enter protected region after disposal) and for GEO Geometric event estimation (eclipses, node crossings, antenna visibilities... but also moon or sun in FOV, point or area overfly)
- On-board attitude and orbit control system, mainly in terms of sensors and actuators as well as body-fixed reference frames for Earth Observing satellites (e.g. local normal geodetic pointing with yaw steering)
- Modelling of Earth Observation mission performances, e.g. spatial coverage, revisiting frequencies, on-board data latencies or timeliness

For Application tools and libraries (in the area of Mission Analysis and Flight Dynamics, proven experience of;

- Orekit, low-level space dynamics library
- Orekit-based developments of relevance for LEO and/or GEO missions
- ESA's Navigation Package for Earth Observing Satellites (NAPEOS)
- GODOT's ESA/ESOC Flight Dynamics software

For Software engineering and development experience;

- Software specification, design, implementation, verification & validation, and software maintenance, with a focus on agile practices
- Software development tools, including relevant IDE, source code and version control tools (i.e. git), non-regression testing, code quality checkers as well as bug or issue tracking and project management tools Continuous Integration (CI) / Continuous Development (CD), including structuring automated processes through pipelines, including automated quality checking, build, testing and deployment

For Development platform has proven experience of;

- Beside Linux, Windows, containerized applications

For Software development languages and tools experience of;

- Additionally Fortran, C/C++, MatLab/Simulink

Contacts

Interested applicants should submit their CV and Cover Letter in **Word** (*.docx) or in **PDF** (*.pdf) format from the website or by emailing the WGS recruitment team at ***vacancies@workgroup-solutions.com*** before **25.11.2024**.