Anastasios-Faidon Retselis

Computational Physicist & Space Systems Engineer

SUMMARY

Hello! My name is Anastasis. I am a trained physicist specializing in astrodynamics applications and space systems engineering. I enjoy the challenges involved with designing & operating systems in space and I am always looking for opporunities to expand and apply my knowledge.

: **Thessaloniki, Greece**

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: **https://retsel.is**

in : **Anastasios-Faidon Retselis** (https://www.linkedin.com/in/retselis)

: **retse** (https://gitlab.com/retse)

: **aretselis** (https://github.com/aretselis)

Experience

May 2022 – *present*

Flight Dynamics Flight Engineer at Satellogic (https://satellogic.com/)

SUMMARY

Flight Dynamics Engineer within the Mission & Operations department, ensuring that the Aleph constellation of 35+ satellites is in position to capture high-resolution imagery of our planet.

- Planning and execution of **orbital maneuvers** for orbit acquisition, station keeping and collision avoidance
- Implementation of **monitoring & alerting** applications for operational purposes
- Troubleshooting of issues related to the **propulsion system** of the satellites
- Development of in-house **notebooks and libraries in Python and Julia** for the automation of processes
- Development of an **autonomous collision avoidance framework** for the entire constellation
- **Research activities** to better understand the performance of the satellites and to expand their capabilities
- **Optimization** of maneuvering framework to ensure minimum disruption to nominal operations and efficient maneuvering
- Thorough analysis and **development of a framework to monitor the pointing performance** of the satellites

May 2023 – Dec 2023

Technical Advisor at PeakSat project (SpaceDot) (https://peaksat.spacedot.gr/)

SUMMARY

Technical Advisor for the PeakSat optical communications CubeSat project, which is part of the ESA-funded “Greek CubeSats In-Orbit Validation” program.

- Co-authoring the proposal submitted to ESA
- Early **system design & requirements** definition
- Performance **analysis focused on orbital dynamics & power domains**
- Technical Consulting

Languages

Greek : ★★★

English : ★★★

German : ★★½

Spanish : ★☆☆

Skills

Programming : ★★★

C | C++ | Python | Julia | OpenMP

Scientific Programming : ★★★

MATLAB | Wolfram Language | Jupyter Notebooks

Astrodynamics : ★★★

System Toolkit (STK) | General Mission Analysis Tool (GMAT) | Numerical Methods

Space Systems Engineering : ★★★

System Toolkit (STK) | Concurrent Engineering | Requirements Engineering | Cost & trade-off analysis

Feb 2019 – Aug 2022

Lead Systems Engineer at AcubeSAT Project (SpaceDot) (https://acubesat.spacedot.gr/)

SUMMARY

Head of the Systems Engineering team for the AcubeSAT project, a 3U CubeSat state-of-the-art biology mission by the Aristotle University of Thessaloniki, supported by the European Space Agency's "Fly Your Satellite! (https://www.esa.int/Education/CubeSats_-_Fly_Your_Satellite)" programme.

- Definition of the system level **requirements** for the spacecraft
- Implementation of the **concurrent engineering** method using relevant tools (OCDT) and hosting over 30 concurrent design sessions
- Supervision of the **system design** and its compliance with requirements and tailored ECSS standards
- Development of in-house **python scripts** for power budget and reliability evaluations
- Definition of the **Manufacturing, Assembly, Integration and Verification Plan (MAIVP)** for the entire spacecraft
- Implementation of **Failure Mode Effect Analysis (FMEA)** and derivation of compensating provisions for critical items
- **Collaboration** with other engineers within the team and external parties for the resolution of technical issues in a fast-paced environment

Feb 2018 – Feb 2019

AOCS subsystem coordinator at AcubeSAT Project (SpaceDot) (https://acubesat.spacedot.gr/)

SUMMARY

Member and coordinator of the Attitude Determination and Orbit Control subteam during the conceptual phase of the AcubeSAT project.

- **Prototyping and development** of a reaction wheel control system planned for AcubeSAT using Arduino and in-house developed hardware
- Early **mission analysis and orbit definition** for the AcubeSAT mission, using a variety of computational tools and theoretical concepts
- Trade-off analysis and definition of the **preliminary physical architecture** of the ADCS subsystem

Education

Nov 2020 – Jul 2022

Master in Computational Physics from the Aristotle University of Thessaloniki with a grade of 9.53/10

- **MSc Thesis:** Image-based orbit determination of the Didymos-Dimorphos binary asteroid system using the Hera spacecraft
- **Relevant coursework:** Computational Dynamics, Astrodynamics and Applications, Computational Mathematics I & II, Data Analysis and Processing using MATLAB
- **Activities:** Teaching assistant for the elective course **Systems Reliability** at the School of Electrical and Computer Engineering

Publications

Jul 2022

Image-based orbit determination of the Didymos-Dimorphos binary asteroid system using the Hera spacecraft (https://doi.org/10.26262/heal.auth.ir.341036) by A. F. Retselis

SUMMARY

My master thesis for the MSc degree in Computational Physics, where I explored a method to determine the orbit of Didymos-Dimorphos using simulated images taken from the Hera spacecraft.

Apr 2022

Adaptation of the AcubeSAT nanosatellite project into remote working during the COVID-19 era (https://upcommons.upc.edu/bitstream/handle/2117sequence=1) by A. F. Retselis, T. Papafotiou and K. Kanavouras

SUMMARY

A conference paper for the 4th Symposium on Space Educational Activities where the transition to remote work for the AcubeSAT project is detailed.

Oct 2020

Orbital analysis and the spin-orbit coupling problem for the AcubeSAT mission (https://ikee.lib.auth.gr/record/324721) by A. Anthopoulos and A. F. Retselis

SUMMARY

My bachelor thesis for the Degree in Physics, where we explored the orbital analysis for the AcubeSAT mission and the possibility of using the spin-orbit coupling problem for the design of the spacecraft.

Sep 2016 – Nov 2020

Degree in Physics from the Aristotle University of Thessaloniki with a grade of 8.05/10

- **BSc Thesis:** Orbital analysis and the spin-orbit coupling problem for the AcubeSAT mission
- **Relevant coursework:** Computational Physics and Applications, Metrology and Quality Systems, Telecommunication systems, Electronic Circuits
- **Activities:** Teaching assistant for the courses Mathematics I and Physics III (Electricity-Magnetism) at the School of Physics