

# Jesse Campbell — Guidance, Navigation & Control (GNC) Software & Simulation Engineer

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## Professional Experience



### ispace U.S.

#### **Guidance, Navigation & Controls (GNC) Engineer**

Dec 2023 — Present

- Leading development of the ispace Simulation Environment (iSE), a deterministic event-driven simulation environment written in C++.
- Responsible for documenting and maintaining GNC software standards and best practices, including for writing flight software in C++.
- Responsible for building and maintaining GNC's (on-premise) Gitlab CI/CD pipeline infrastructure for automating development tasks.
- Leading integration process of GNC algorithms (written in C++) into final GNC flight software product.



### Maxar Space (formerly Space Systems / Loral) [8 Years 5 Months]

#### **Software Systems Engineer, Senior Staff**

Nov 2023 — Dec 2023

- Promotion, same responsibilities as previous role.

#### **Software Systems Engineer, Staff**

Feb 2023 — Nov 2023

- Title change, same responsibilities as previous role.

#### **Dynamics, Controls and Analysis (DCA) Engineer**

Jun 2022 — Feb 2023

- Formal transfer to DCA from GNC Systems. Discontinued tasks for the GNC Systems department in order to focus on DCA tasks.
- During this time, transferred to working on the T1TRK program, where I lead the effort to build the next iteration of the SSL500 bus simulation environment originally used on the WorldView Legion program.

#### **GNC Systems Engineer**

Mar 2019 — Jun 2022

Split time between Dynamics Controls and Analysis (DCA) and GNC Systems departments.

- For DCA, designed flight software in Matlab/Simulink (autocoded to C/C++) for onboard orbit determination on the SSL500 Legion-Class spacecraft bus, as well as high fidelity orbital dynamics simulation software used in testing. Lead dev-ops efforts for the WorldView Legion ACS subsystem flight software development team, specifically Gitlab CI/CD.
- For GNC Systems, led effort to rewrite legacy software into the Julia programming language from FORTRAN77.

#### **Mission Analysis & Design Engineer**

Feb 2018 — Mar 2019

- Designed mission plans and provided analyses for geostationary spacecraft, including propellant budgets, maneuver plans and electric orbit raising analyses. Programs included Star One D2, SiriusXM-7 & 8, and BSat-4b.
- Supported orbit raising operations, including maneuver planning and orbit determination, for programs including Telstar 18V and Azerspace-2.
- Contributed to orbit propagation flight software for programs such as SiriusXM-7 and RESTORE-L.

#### **Orbit Dynamics Engineer**

Jul 2016 — Feb 2018

- Responsibilities overlapped with CVE role for approximately one year as I worked to bring the BulgariaSat-1 mission to a successful launch.
- Provided cradle-to-graveyard-orbit analyses for geostationary spacecraft, such as propellant budgeting, orbit-raising maneuver planning, electric propulsion analyses, and on-orbit station-keeping operations. Contributed to programs such as BulgariaSat-1, JC-Sat-14/15/16, Echostar-18/19/21/23, AsiaSat-9, NASA's Restore-L, SiriusXM-7/8, Star One D2.

#### **Communications Vehicle Engineer (CVE)**

Jul 2015 — Jun 2017

- Responsible for conducting tests of RF payload systems for commercial communications satellite programs, primarily for BulgariaSat-1.
- Worked with technicians in RF testing campaigns. Provided on-site launch-base support for the BulgariaSat-1 mission in Cape Canaveral, Florida.
- Built and maintained a full-stack web server designed to facilitate payload testing processes and provide better troubleshooting tools.

# Educational Background



University of California, Irvine

## M.S. Mechanical & Aerospace Engineering

Dynamics & Control2014

Master's Thesis: Classifications of Time-Optimal Constant-Acceleration Earth-Mars Transfers

## B.S. Physics, Mathematics

Astrophysics & Computational Physics, Applied & Computational Math2011

# Some Relevant Technical Skills

■■■■■ Julia

■■■■■ MATLAB/Simulink

■■■■■ C/C++

■■■■■ Rust

■■■■■ Python

■■■■■ Bash

■■■■■ Git

■■■■■ Gitlab CI/CD

■■■■■ Embedded Programming

■■■■■ GMAT

■■■■■ FreeFlyer

■■■■■ cFS (Core Flight System)

■■■■■ Orbital Mechanics

■■■■■ GNC Simulation Design

■■■■■ GNC System Design

■■■■■ Orbit Determination

■■■■■ Numerical Optimization

■■■■■ Kalman Filtering