🏠 15881 Little Bluestem Rd, Monument, CO 80132 | ☎ (813) 756-4705 | ✉ joseph@josephgruber.com
https://gitlab.com/joseph.gruber | https://linkedin.com/in/josephgruber

JOSEPH GRUBER

SUMMARY

As a mission-driven software engineer and engineering leader, my strong passion for democratizing access to space drives my work. With extensive experience in systems engineering, software engineering, and program leadership, I have developed and operated multiple earth-observing satellites, ground segments, and crewed launch vehicles.

My background spans all mission lifecycle phases, from designing, testing, and deploying a complex autonomous system for satellite constellation mission management to software and hardware validation for a human-rated launch vehicle. I bring broad cross-functional expertise in driving technology modernization, mission systems engineering, spacecraft operations, integration & testing (I&T), project management, and anomaly resolution, showcasing my strong technical skills.

A capable and creative problem solver, I thrive in wearing many hats in a fast-paced environment. My ability to excel at leading multi-disciplinary teams in combining modern systems & software engineering best practices with an agile mindset instills confidence in my capability to solve modern space engineering challenges.

EXPERIENCE

Umbra Space, Remote — *Sr. Software Engineer II*

April 2023 - PRESENT

- Architected and developed a suite of API-driven microservices using FastAPI and Pydantic for space mission operations, encompassing telemetry & commanding, ephemeris management, orbit determination, and automated maneuver planning.
- Led the migration of services from a legacy Celery-based infrastructure to a more robust and scalable Argo Workflows-based infrastructure, resulting in significant cost savings and enhanced service deployment capabilities, including the ability to deploy updated services during satellite passes.
- Automated key mission workflows in collaboration with the mission operations team, reducing errors, minimizing risk, and increasing operational efficiency.
- Championed the adoption of new technologies and best practices across the organization, driving the use of Jira for issue tracking and creating and delivering training materials for Argo Workflows and OpenAPI client generation.

- Actively guided and mentored colleagues, fostering growth through knowledge sharing and technical guidance in software development, debugging, and design documentation.
- Supported the Flight Software (FSW) team, at the request of the company's executive leadership, by developing critical FSW components using Rust, including the health service and supervisor service.

Maxar Technologies, Denver, CO/Remote — *Sr. Software Engineering Manager*

August 2021 – March 2023
Project: Space Programs Delivery – Ground Software

- Built an engineering vision leading an agile team of junior and senior software engineers through a transition of legacy systems to a modern software development lifecycle across multiple ground software products.
- Provided technical guidance and documented processes for continuous integration, continuous development, automated testing, and infrastructure as code.
- Facilitated team growth to scale with the organization's needs through employee development, mentoring, training, & stretch opportunities.
- Implemented a support model to provide 24/7 operational support of command and telemetry systems for multiple under-test and in-orbit spacecraft.
- Architected and designed a prototype of a near real-time telemetry ingestion, monitoring, and visualization system utilizing InfluxDB, Amazon ECS, and Amazon Kinesis.
- Mentored engineers on the re-architecture of a legacy command and telemetry handbook database application using an AWS cloud-based architecture.

Amazon Web Services, Denver, CO/Remote — *Sr. Space & Satellite Systems Technical Program Manager*

June 2020 – August 2021
Project: AWS Ground Station

- Drove agile software development and systems engineering efforts across a cross-functional software, hardware, and RF/antenna engineering team. Responsible for assessing risks, planning development goals, and overcoming technical obstacles for a global network of ground stations used for satellite commanding, control, and downlink.
- Specified deliverables, defined roadmaps, and managed schedules to scale and sustain operations and reliability of software components and hardware systems. Led anomaly investigations and recovery for high-severity events.
- Architected and defined launch and early orbit phase (LEOP) operational and contingency processes. Conducted test events and mission simulations. Directed LEOP support team for the deployment of numerous low-earth orbit (LEO) satellites in coordination with multiple customers.
- Executed efforts to design, build, validate, and deploy capability for custom ephemeris data support via Orbit Ephemeris Message (OEM) files for scheduling satellite contacts. Developed a library of ephemeris utilities for pre-launch, on-orbit, and reentry analysis.

- Planned and coordinated the launch of four international, multi-antenna ground stations and three new AWS ground station regions. Led security assessment and readiness, resulting in FedRAMP Moderate authorization.
- Interacted with customer-facing technical teams, providing subject matter expertise and training in multiple areas, including spaceflight operations, space situational awareness (SSA), orbit propagation, and flight dynamics.

Blue Origin, Seattle, WA — *Software Lead, Technical Project Manager*

February 2019 - June 2020
Projects: New Shepard Software Architecture, New Shepard Production, Test, & Operations

- Led multi-discipline engineering teams developing, validating, and qualifying crewed launch vehicle avionics flight software and hardware. Orchestrated requirements definition, system design, system verification, deployment, and operations support.
- Drove cross-organizational improvements to software engineering strategy according to mission and safety-critical engineering standards, leading to the organization's first on-schedule flight software mission deliverable.
- Modernized the continuous delivery and infrastructure automation of software tooling, utilizing a cloud-based architecture, reducing validation time and increasing parallelization of qualification effort.
- Provided schedule, cost, and technical coordination for multiple payload and flight test missions across parallel software and hardware release schedules.
- Created and coordinated software compliance plans documenting safety and reliability for flight software qualification review.

a.i. solutions, Lanham, MD — *Mission Software Engineer, Consulting Software Engineer*

July 2016 - February 2019
Projects: NASA Earth Science Mission Operations (ESMO), NASA Space Network Ground Segment Sustainment (SGSS)

- Led and mentored a high-performing engineering team providing 24/7 operational support for a constellation of NASA Earth-observing satellites, ensuring continuous data acquisition and mission success.
- Developed and deployed DevOps infrastructure for flight dynamics and constellation coordination systems, resulting in an 80% reduction in manual testing and improved scalability for future missions.
- Automated critical satellite operations, including close approach violation detection and debris avoidance maneuvers, enabling a 5x increase in daily conjunction assessments and enhancing spacecraft safety.
- Spearheaded process improvements and implemented corrective actions to achieve CMMI-DEV Level 3 maturity, improving software development quality and efficiency.
- Analyzed system architecture designs for a major upgrade to the NASA Space Network ground segment (TDRSS), identifying lifecycle supportability risks and

recommending mitigation strategies to ensure seamless operational handover and long-term sustainment.

ECG, Inc, Lanham, MD — *Lead Planner*

March 2014 – January 2016
Project: NASA Geostationary Operational Environmental Satellite R-Series (GOES-R)

- Supported mission readiness reviews by providing comprehensive schedule and performance analysis to the chief engineer's office, facilitating informed decision-making.
- Generated and managed mission-critical schedules for launch and orbit-raising activities, ensuring on-orbit performance requirements were met, and data products were operationally ready.
- Contributed to the architecture and deployment of a petabyte-scale data storage solution for GOES-R, enabling efficient handling of CCSDS-formatted level zero data for instrument calibration and validation.

Prior Experience

- Lead Planner – Wyle Laboratories – F-35 Joint Strike Fighter (JSF)
- Systems Integration Engineer – SAIC – U.S. Southern Command (USSOUTHCOM)
- Software Analyst – Lockheed Martin – U.S. Central Command (USCENTCOM)

EDUCATION

Embry-Riddle Aeronautical University
Masters of Aeronautical Science (Space Studies)

Florida Institute of Technology
B.A. Business Administration (Computer Information Systems)

Hillsborough Community College
A.A. Computer Information Systems

CERTIFICATIONS

- AWS Solutions Architect – Professional
- FreeFlyer – Level 1
- Satellite Tool Kit (STK) – Master
- Project Management Professional (PMP)
- Professional Scrum Master (PSM-I)

AWARDS

- NASA Flight Dynamics Support Services Team Technical Innovation Award
- NASA/NOAA GOES-R Process Improvement and Innovation Award

RELEVANT SKILLS

Programming Languages

Python, Rust, JavaScript, Node.JS, PHP, C#, C++, SQL, Visual Basic.Net, Visual Basic for Applications (VBA), Bash

Platforms

AWS (Compute, Containers, Database, Networking, Serverless, Storage), Windows Server, Linux, RTLinux, Mac OS X, Solaris, VMware, Hyper-V, NASA core Flight System (cFS), Github, Gitlab, Argo Workflows, ArgoCD

Software

a.i. solutions FreeFlyer, AGI Satellite Tool Kit (STK), Atlassian (JIRA, Confluence, Bitbucket), CloudFormation, Docker, GitHub, Gitlab, IBM Rational DOORS, IBM Rational Team Concert (RTC), Jenkins, Kubernetes, Microsoft Project, Microsoft SQL Server, MySQL, MongoDB, MathWorks MATLAB, MathWorks Simulink, Oracle Primavera P6, Oracle Primavera Risk Analysis (PRA), Orekit, OS/COMET, Puppet, TeamCity, Terraform

Mechanisms & Process

Agile methodology (Scrum, Kanban), Infrastructure as Code, Schedule Management, Test Driven Development, Automated Testing, Verification & Validation (V&V), Requirements Development, Release Planning, NASA-STD-3001, NPR 7150.2, NPR 7120.5, DO-178C, CMMI-DEV