

Luke Stewart

8079 S Quince Cir., Centennial, CO | stewalc@gmail.com | 256.683.1560

Summary of Qualifications

Intangibles

- An energetic and self-motivated engineer with a record of successfully leading groups, organizing tasks and designing, implementing, deploying, and maintaining full-stack solutions ahead of schedule and under budget
- Effective communicator across cultural, organizational, and engineering disciplines

Technical Skills

- Programming: **Python**, C/C++, Java, Bash, Go, JavaScript (React, Angular, Svelte), Awk, Groovy, ~~Perl~~, ~~PHP~~, Markdown, PyTorch, NLTK, MCP, LLM, Ollama
- Applications: Ant, **AWS**, Claude, CMake, **Docker/Podman**, Eclipse, **FPrime**, **Git** (Hub, Lab, command line), Gradle, **GreenHills**, Jenkins, **Linux/Unix** platforms, Matlab, NGINX, Octave, Purify, **SQL** (many DB flavors), Sun Grid Engine (SGE), Subversion, System ToolKit (STK), Terraform, Valgrind, Vim, VMWare, VSCode, **VxWorks**

Security Clearance

- Department of Defense **Secret**

Education

Auburn University, BS Electrical Engineering

May 2006

Experience

NASA Jet Propulsion Laboratory *Software Systems Engineer III – Pasadena, CA*

May 2019 - present

- **Cognizant Engineer (CogE) – Psyche** Deep Space Optical Communications (**DSOC**) **OpenMCT**. Personally designed real-time Ground Data System architecture synchronizing streaming telemetry from multiple antennas available at an AWS-deployed RESTful endpoint (React).
- Multiple Uplink Per Antenna (**MUPA**) Space Link Extension (SLE) Forward CLTU (FCLTU) Service Multiplexer (FMUX). Python-based novel approach for multiplexing CLTUs allowing one DSN antenna to service multiple spacecrafts' uplink needs.
- Common Mission Control (CMC). Integrating **YAMCS** mission control framework (Java) into JPL missions to establish a NASA-wide Common Mission Control Ground Data System (GDS), which requires a deep understanding of CCSDS packets, frames, and Space Link Extension (SLE) interfaces.
- **Psyche Pass Automation**. Python program currently used by **Psyche**, **Europa Clipper**, and other Earth-orbiting missions to automatically initiate space antenna station connection and downlink processing using AMPCS driven by DSN (SPS) track scheduling.
- Actively supported Mars 2020 (**Perseverance Rover**; **Ingenuity Drone**) automated execution and analysis of Second Chance (SECC) flight software to ensure successful Martian Entry Descent and Landing (**EDL**).
- Created a self-contained automated Docker orchestration framework to launch and interact with AMPCS (Ground Control Software), Vista (a NASA OpenMCT plugin for telemetry visualization), and cFS (Core Flight System; an open-source flight software framework)/FPrime (a flight-proven, multi-platform, open-source flight software framework) to demonstrate Mission Control System's full suite of functionality with a simple, user-facing emphasis.
- Helped implement a Continuous Integration pipeline for Mars 2020 CS3 (Common Software and Services Subsystem) to build Docker images and auto-deploy AWS (Amazon Web Services) GovCloud environments for 80+ subsystem component functionalities using Jenkins, Docker, and terraform.

Raytheon Company *Principal Software Engineer – Pasadena, CA*

June 2017 - April 2019

- Developed, Executed, and Reviewed Functional Integration Tests (FIT) for **Mars 2020 Flight Software**.
- Architected and implemented a Continuous Integration Automated Testing Solution for Mars 2020 (WART).

Raytheon Company *Systems Engineer – Aurora, CO*

August 2010 - June 2017

- **GPS OCX** automation/integration specialist, Subject matter expert for JPL program code (RTGx Kalman Filter; Trajedy astrodynamics propagator).
- GPS OCX System Simulator (**GSYS**) developer, integrator, and subject matter expert.
- Worked with **Digital Defense Services** (DDS) to integrate DevOps mentality and practices into the GPS OCX Program.
- Implemented Distributed Computing framework for analysis/execution using parallel processing (C++ [an IPC methodology]) and MapReduce (modular Distributed Computing) techniques.
- Wrapped real-time Satellite Flight Software (C++ and ADA compiled with GreenHills and GNAT Pro/AdaCore, respectively) to interact within the GSYS Simulation Framework.

Raytheon Company *Systems Engineer – Woburn, MA*

July 2008 - August 2010

- Support Analyst at **MDIOC** in Colorado Springs as AN/TPY-2 radar simulation (**CRUSHM**) support analyst for the TA-10 event.
- Worked on classified defense contract tasks for simulation, modeling, and analysis of Forward Based X-Band - Transportable (FBX-T) and AN/TPY-2 Radar systems.
- Prepared, compiled, and installed various releases of CRUSHM on-site at customer locations.

Publications

Operational Results from the Deep Space Optical Communications Project Ground Laser Transmitter

2025

Meenehan, Velasco, Srinivasan
10.1117/12.3041400

Space Telemetry Analysis with PyContract

2023

Duckett, Havelund, Stewart
10.1007/978-3-031-40132-9_17

Special Activities and Awards

NASA JPL Awards

- 2025 **NASA Group Achievement Award** – MGSS Collaborative Mission Control Evaluation and Testing Team
- 2023 **NASA Voyager Individual Achievement Award** – Psyche DSOC Ground Data System Design, Development, Testing, and Deployment
- 2023 **NASA Group Achievement Award** – Exceptional System Engineering, Planning, Coordination, Software Development, and Testing of AMPCS Python 3 Migration
- 2021 **NASA Group Achievement Award** – Outstanding Contributions to the Successful Development, Test, and Delivery of the Psyche Flight Software

Personal

- Auburn University **Honors College**, 2006
- **Eta Kappa Nu** – Xi Chapter, 2005
- Auburn University **Solar Car Team**, 2004
- Boy Scouts of America **Eagle Scout**, 1999