

Christopher P. Volk

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OBJECTIVE

Experienced astrodynamics and spacecraft flight operations engineer with a passion for solving today's complex space engineering problems.

EXPERIENCE

GRACE-FO Operations Engineer, *Jet Propulsion Laboratory* 2020 - Present

- Responsible for daily Level-1 operations and processing of the GRACE-FO spacecraft
- Developed automating monitoring and QA software for various aspects of spacecraft operations

Navigation Engineer, *Jet Propulsion Laboratory* 2018 - Present

- Led DDOR operations for the Lucy, DART, PSP, Mars 2020, EMM, and NHPC deep space missions
- Integrated past DSN FORTRAN releases into GitHub for version control, bug tracking, and development
- Improved ranging accuracy for BepiColombo through development of the Advanced Ranging Instrument
- Developed and validated C code for spread spectrum PN DDOR processing and operations
- Updated DDOR operating standards in collaboration with the multi-national CCSDS organization

Astrodynamics Engineer, *Boeing Satellite Development Center* 2016 - 2018

- Lead developer for propellant budgeting tool in support of on-contract and in-proposal satellites
- Designed and executed backup low-thrust transfer mission following spacecraft main engine failure
- Created suite of mission assurance and real-time visualization tools in support of transfer orbit operations
- Monitored and diagnosed RF ranging data in support of orbit determinations
- Supported modeling and analysis team in characterizing constellation performance and design

Spacecraft Flight Engineer, *Boeing Satellite Development Center* 2014 - 2016

- Implemented and validated spacecraft operating procedures for on-orbit and in-production satellites
- Responded to on-orbit anomalies to ensure a rapid safing, recovery, and return to service
- Coordinated with customers to support on-orbit satellite operations and training programs
- Operated on transfer mission operations team as both ACS and Spacecraft Engineer

Aerodynamics Undergraduate Researcher, *Rensselaer Polytechnic Institute* 2012 - 2014

- Developed aerodynamic models for conventional and coaxial helicopter control trim codes
- Substantiated MATLAB simulations with NASA empirical wind tunnel data

PUBLICATIONS AND PATENTS

“Pseudo Noise Differential One Way Ranging (PN DOR) Post Processing Overview.” *JPL IPN Progress Report 42-226, August 2021*

“Improved Signals for Differential One-Way Range.” *IEEE Aerospace and Electronics Systems Magazine, March 2020*

“Measurement of Station Delay at DSS-25.” *JPL IPN Progress Report 42-217, May 2019*

“Systems and Methods for Deploying Spacecraft.” *Published U.S. Patent 20180162561, June 2018*

“The Near Earth Object Scout Spacecraft: A Low-Cost Approach to In-Situ Characterization of the Near Earth Object Population.” *13th International Conference on Space Operations, SpaceOps 2014*

“A MATLAB GUI for the Prediction of Coefficients of Restitution.” *Sandia National Laboratories, 2013*

EDUCATION

M.S. Astronautical Engineering — GPA 3.87/4.00 December 2015
University of Southern California, Los Angeles, CA

B.S. Aeronautical Engineering — GPA 3.97/4.00 May 2014
Rensselaer Polytechnic Institute, Troy, NY

CERTIFICATIONS AND SKILLS

Programming: Python, C, Perl, MATLAB, Bash, LabVIEW, Simulink, HTML, PHP, VB, VBA, FORTRAN
Software: GitHub, STK, PBS Pro, PuTTY, VNC, Microsoft Office, Adobe Creative Suite, LaTeX