Richard Connor Johnstone

Aerospace Engineer

Profile

Currently pursuing employment as an Aerospace Software Engineer while earning a Masters in Aerospace Engineering (focus in Astrodynamics) at the University of Colorado – Boulder.

Contact

connor@richardconnorjohnstone.com

690 Inca Parkway
Boulder, CO 80303

+1 (502) 414-1242

richardconnorjohnstone.com

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Languages

Python	■■■■■	Julia	■■■■■
C++	■■■■□	MATLAB	■■■■□
LaTeX	■■■■□	Mathematica	■■■□□
Rust	■□□□□		

Guidance Software

GMAT	■■■■■	STK	■■■□□

CAD Software

PTC Creo	■■■■■	AutoCAD	■■■■□
Solidworks	■■■□□	CATIA v5	■■■□□

Operating Systems

Linux	■■■■■	Windows	■■■■□

Other

Git	■■■■□	Office	■■■■□
Vim	■■■■□	LabVIEW	■□□□□

Skills

Experience in programming in both low and high level languages for a wide variety of aerospace engineering applications: Kalman Filtering, trajectory design of Earth-based and interplanetary missions, control theory for low-thrust mission design, control of attitude systems using quaternions and Modified Rodriguez Parameters, and orbit determination and proximity/rendesvous operations leveraging computer vision. Some experience in containerizing platforms (Docker) for web-based server deployment. Also some experience in Linux bash scripting.

Education

- Masters of Aerospace Engineering
  University of Colorado – Boulder, Boulder, CO, August 2018 – Current
  Currently pursuing a Masters degree with a focus in astrodynamics. GPA: 3.5/4.0
- Bachelor of Science in Mechanical Engineering
  University of Kentucky, Lexington, KY. August 2011 – May 2016
  General training in Mechanical Engineering practices including product design, with an emphasis on orbital mechanics. GPA: 3.6/4.0
- Bachelor of Science in Physics
  University of Kentucky, Lexington. August 2011 – May 2016
  General training in all types of physical sciences, including general and special relativity, electromagnetism, and quantum mechanics. GPA: 3.6/4.0

Recent Experience

- Internship
  Palski And Associates, Colorado Springs, CO. Summer 2019
  Organized an effort to develop and build a package to automate telescope observations to perform satellite orbit state determination using purely visual information in C++ utilizing many common libraries and frameworks (Eigen, OpenCV, Boost,etc.). Developed a program to determine range, azimuth, and elevation information from the observations and solve for state elements using Gooding's approach to Lambert's problem, applying that software to a batch estimator to accumulate and improve results.
  Also developed flight-ready software in C++ for a variety of proximity/rendesvous operations for a secondary observational cubesat during critical missions,leveraging feature detection and recognition in point cloud, LIDAR, and RGB image data, as well as a handful of convenience scripts written in Python. Learned about common development workflows involving Agile methodology, git, Amazon Web Services, etc.
- Mechanical Design Engineer 2
  Lockheed Martin Missile and Fire Control, Lexington, KY. February 2018 – August 2018
  Performed product design and redesign for several important armoring subsystems of the GMV 1.1 military vehicle, including cost reduction, weight reduction, and armor performance improvements on the vehicle chassis and outer shell. Typically performed rapid brainstorming and turn-around time to provide support for Special Operations in the US Army.
- Lead Design Engineer
  Rhodes Systems International, Louisville, KY. August 2016 – February 2018
  Completely redesigned the kickout/crossover box subsystems for industrial tow-line conveyor systems in heavy equipment finishing and manufacturing. Responsible for system-level design of several projects with sale prices over $1 Million. Also responsible for oversight of machining and project fabrication shop operations.

Research

- Research Experience
  University of Kentucky, Lexington, KY. Spring 2014 – Spring 2016
  Spent two years working on a project that utilized the passive magnetic field shielding capabilities of μ-metal material and combined it with an active shielding concept utilizing a Helmholtz coil design. The project is currently under the process of exploring patent options.
- Inertial Electrostatic Confinement Plasma Generation
  University of Kentucky, Lexington, KY. Fall 2015 – Spring 2016
  As a Senior Capstone design project I led a team of Mechanical Engineering students to create an electrostatically confined plasma generated in a vaccuum environment using a Paaschen discharge event. Demonstrated applications in high voltage ciciutry design and spectrographic analysis of plasma in a space-craft propulsion capacity.

Honors, Certifications, Licenses

US Secret Clearance	Private Pilot PPL (42 Hours)	ACT 35/36
NAUI Certified Scuba (Open Water)	National Merit Finalist	GRE: V167, Q167, W5.5
Magna Cum Laude	Patterson Scholar	