JOSEPH GIBSON

COMPUTER ENGINEER

EDUCATION

Grand Valley State University
B.S.E, Computer Engineering
Grand Rapids, MI   **2015**

GPA: 3.957   *Magna Cum Laude*
ASEE CEED National Co-op Student of the Year
Academic Excellence Award in Computer Engineering
Outstanding Senior in Computer Engineering
Tau Beta Pi Engineering Honor Society

SKILLS

C
C++
Python
Bash
VHDL

Git version control	Flight software
Unix terminal (gdb, make, etc.)	FPGAs (VHDL)
LaTeX	PCB-design (Altium, Eagle, KiCad)
Machine vision algorithms	Oscilloscopes and mutimeters
Image processing	Circuit analysis
Algorithm optimization (C/C++)	Space systems
Hybrid computing systems	Space-grade processors
Adobe Illustrator	Avionics systems
Perl, Awk, Sed	Embedded system design
HTML, CSS, PHP, JavaScript	Robotics
Operating systems	Astrophysics and cosmology
Real time operating systems	Particle physics

LANGUAGES

English
Spanish
French
Russian

EXPERIENCE

NASA   📍 **Washington, D.C.**
Goddard Space Flight Center
Principal Flight Software Engineer   *Jan 2016 - Present*
Intuitive Machines, Inc.
Code 480: NExIS (NASA Exploration and In-space Services)

- Remote since late 2019 (Traverse City, MI)
- OSAM-1 robotic servicing mission to autonomously grapple and reservice a US gov client satellite in Low Earth Orbit (LEO)
- Hybrid Flight Computing System team
- Develop critical flight software in C/C++ on PowerPC e500v2 and x86 architectures for VxWorks real time operating system
- Optimize and implement image processing, machine vision, and pose algorithms for autonomous spacecraft rendezvous, grapple, and GNC
- Write drivers to interface with FPGA (Xilinx Virtex-5) based algorithm acceleration cores including custom double precision floating point unit
- Develop flight applications for VxWorks using NASA Core Flight System (CFE/CFS) and OS Abstraction Layer (OSAL)
- Create command and telemetry spec and operate ground system (ASIST and COSMOS)
- Develop ground tools in Python for data analysis, plotting, image conversion, latency analysis using libraries such as pandas, numpy, bokeh, etc.
- Perform flight code reviews, static analysis (CodeSonar), and implement secure embedded coding practices
- Perform unit testing (CFE UT-Assert and gtest) and regression testing
- Develop and maintain mission-level C/C++ Flight Coding Standards
- Write documentation in Doxygen, LaTeX, Markdown, and Word
- Present technical information at critical reviews (PDR, CDR, etc.)
- Experience at multiple high-profile test campaigns with EDU and flight hardware (avionics, robotic arms, sensors, etc.) and GSE (ground support equipment)
- Support closed-loop GNC testing with full-scale payload and client mockup
- Brief experience with mission operations (external ISS payload)
- NASA Foundations of Aerospace certification
- Teach Git version control to multiple teams at NASA

CERN   📍 **Geneva, Switzerland**
European Center for Nuclear Research
Research Assistant, ATLAS Experiment   *Aug 2014 - Jan 2015*
- Research in quantum chromodynamics at the Large Hadron Collider (ATLAS Experiment)
- Developed *Spectrum*, a proton-proton cross-section analysis software in C++, ROOT, and Python
- Designed spectrum.web.cern.ch website in Python, PHP, and JavaScript

EXPERIENCE

NASA   **◉ Washington, D.C.**
Goddard Space Flight Center
Computer Engineering Co-op, BETTII Project   *Jan - May 2014*
Code 665: Astrophysics, Observational Cosmology Laboratory

- BETTII Project: http://asd.gsfc.nasa.gov/bettii/

- Balloon telescope for infrared interferometry

- Interfaced with stellar image processing software in C and C++

- Developed StarTracker software for star cameras

- Created an RS-422 communication network on an FPGA

L-3 Communications   **◉ Grand Rapids, MI**
Avionics Systems
Computer Engineering Co-op   *May - Sep 2013*

- Designed software to configure and test avionics instruments

- Developed GUIs in C using LabWindows/CVI

- Tested units under environmental conditions and analyzed data

Custom Electronics, Inc.   **◉ Grand Rapids, MI**
Engineering Consulting
Computer Engineering Co-op   *Nov 2011 - May 2013*

- Programmed 8-bit Microchip microcontrollers in C using MPLAB X

- Wrote software for scientific instrumentation buoys

- Designed a series of eight electric guitar effect pedals

- Designed electrical schematics and PCBs in Altium Designer

INTERESTS

Languages, travel, machine vision, cryptography, computer security, hiking, backpacking, dogs, brewing, physics