JOSEPH GIBSON

COMPUTER ENGINEER

2015

EDUCATION

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

GPA: 3.957 Magna Cum Laude

ASEE CEED National Co-op Student of the Year 2014
Academic Excellence Award in Computer Engineering
Outstanding Co-op Student 2015
Outstanding Senior in Computer Engineering 2015
FIRST Robotics Engineering Scholarship
Award for Excellence Scholarship
Faculty Award of Distinction Scholarship
Tau Beta Pi Engineering Honor Society

SKILLS



Git version control

Unix terminal (gdb, make, etc.)

LaTeX

Machine vision algorithms

Image processing

Algorithm optimization (C/C++)

Hybrid computing systems

Adobe Illustrator

Perl, Awk, Sed

HTML, CSS, PHP, JavaScript

Operating Systems

FPGAs (VHDL)

PCB-design (Altium, Eagle, KiCad)
Oscilloscopes and mutimeters

Circuit Analysis

Space Systems Engineering

Space-Grade Processors

Avionics Systems

Embedded System Design

Embedded System Design

Robotics

Astrophysics and Cosmology

Particle Physics

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 2020 (Michigan)
- OSAM-1 robotic servicing mission to autonomously grapple and reservice a US gov client satellite in Low Earth Orbit (LEO)
- Hybrid Flight Computing Systems Team
- Develop critical flight software in C/C++ on PowerPC e500v2 and x86 architectures for VxWorks operating system
- Optimize and implement image processing and machine vision algorithms (edge detection, circle tracing, segmentation, 3D point cloud, filters, etc.) for autonomous spacecraft rendezvous, robot arm grapple, and GNC
- Interface with FPGA-based algorithm acceleration cores including custom hardware double precision floating point unit
- Develop flight applications for VxWorks using Core Flight System (CFE/CFS) and OS Abstraction Layer (OSAL)
- Write drivers to interface with FPGAs (Xilinx Virtex-5) via PCIe and sRIO
- Create command and telemetry spec and operate ground system (ASIST)
- Develop ground tools in Python for data analysis, plotting, image conversion, latency analysis using libraries such as pandas, numpy, bokeh, etc.
- Create group in charge of code review, static analysis (CodeSonar), and secure embedded coding
- Develop mission-level C/C++ Flight Coding Standards
- Write documentation in LaTeX and Doxygen
- Present technical information at critical reviews (PDR, CDR, etc.)
- Experience at multiple high-profile test campaigns with development 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 and Sys Admin certification
- Teach Git version control to multiple teams at NASA

LANGUAGES



CERN

9 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 $\it Spectrum, a$ 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

9 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