



## PASSIONS

- Balance of interest between hardware & software
- Collaborative & effective teamwork
- Advocacy for free & open-source hardware & software
- Creative problem-solving
- Life-long learning & commitment to quality
- Thoughtful optimization

## EXPERIENCE

### Self-Employed

Apr '18 – Present

#### Freelance Technical Consultant

- Small-business & residential systems engineering, solution design & implementation
- Remote system administration: (Debian, Docker, kvm, libvirt, NAS/SAN, scripting, VPN, etc.)
- Technical research studies for Fortune 50 company: IoT/embedded, CV, IDE & API evaluation
- Volunteer open-source contributor & advocate: Armbian, AsteroidOS, Debian, FreedomBox, Libre Computer, Olimex, Purism

### Thermo Fisher Scientific

May '22 – July '22

#### Firmware Engineer (contract)

- Feature development and sustainment of Attune NxT flow cytometer (C)

### Biamp Systems Corporation

Sept '21 – May '22

#### Firmware Engineer (contract)

- Python developer (and later technical lead) of ABC2500/VBC2500 Parlé conferencing bar product line
- Mentored junior developers (code review, Linux development and administration, morale, professional growth)

### GIRD Systems

Oct '19 – May '20

#### Embedded Software Engineer (contract)

- REDHAWK component development (C++, Python, Docker, GitLab CI, TCP/UDP, GNU/Linux, porting) supporting \$40M contract regarding GPS interference mitigation systems onboard military aircraft
- Proposed implemented COVID-19 continuity plan to enable remote operations of >90% of hardware engineers
- Proposed numerous implemented features/improvements to R&D & IT (Mattermost, Jitsi, GitLab CI/CD)
- GitLab/git SME

### U.S. Department of Defense

Aug '10 – Apr '18

#### Hardware/Software Design Engineer (Government Lead)

Jan '15 – Apr '18

- Enabled navigational battle-space situational awareness by detecting & characterizing Global Positioning System (GPS) signals & distinguishing interference from actual GPS signals
- Led 3 software engineers to deliver 3 fully-operational (i.e. live mission system) releases within 12 months of start of contract
- Initiated numerous successful partnerships with external agencies & the military
- Presented technical capability overviews & demonstrations at electronic warfare conferences & summits
- Managed & mentored three full-time college interns
- Software-defined radio capability development
  - Reduced processing time of a GPS code finder from 19 hours to 1.5 seconds (MATLAB, C)
  - Demodulation algorithm development (C++)
  - Testing & evaluation (Jenkins, Python)

#### Avionics Engineer (selected for special project, simultaneous with above)

Nov '16 – Mar '17

- Constructed power/communication interfaces (embedded C; BeagleBone Black) between the NanoRacks External Platform (International Space Station) & a cubesat payload, consisting of: power distribution board (PDB); FPGA; GPP; RF HW
- PCB component selection, PCB design improvements (KiCad), fabrication ordering, component population
- Hardware-in-the-loop electronics testing, performance characterization, anomaly resolution for flight payload
- Launched on Orbital ATK's OA-8 mission, Wallops Flight Facility, Virginia, 12 November 2017
- System installed & powered; nominal temperatures & interoperability with ISS & payload, 10 Jan 2018

#### Hardware/Software Design Engineer

Feb '12 – Dec '14

- High-speed layer-2 telecommunications capability development (VHDL, C)
- 40Gbps OTN network traffic processing & 100Gbps byte-width packet inspection
- Technical support of live mission-essential systems to minimize system outages

## U.S. Department of Defense (continued)

Aug '10 – Apr '18

### Data Center Information Technology (IT) Operations (internship)

Apr '11 – Aug '11

- Installations, engineering & technical support of enterprise IT infrastructure
- Articulated concerns of the fundamental design/layout of a critical data room; presented analysis to lead network/system engineers, resulting in a \$1.2M remodel & adoption of 12 new standard design practices
- Recognized by the director of research for preventing schedule slippage of an emergency relocation of a 33-rack critical mission system during an accelerated data center fit-up

### Geospatial Intelligence Software Engineer (internship)

Aug '10 – Dec '10

- Developed software in a production environment using C# in Microsoft Visual Studio
- Delivered a Windows Service 25% ahead of schedule, running since September 2010 with no reported issues
- Designed, developed, delivered, & maintained Microsoft Excel & Word coordinate-conversion add-ins; used company-wide & supported 27 Marine troops serving counter-IED missions in Iraq/Afghanistan as of 2011
- Created & documented novel unprivileged software installation method, adopted by Microsoft system architects

## SKILLS AND TECHNOLOGIES\*

**Agile Development/Project Mgmt** Atlassian Suite<sup>4</sup>, GitHub/GitLab<sup>7</sup>, GitLab CI/CD<sup>2</sup>, Jenkins<sup>4</sup>

**Code Management & Build** Git<sup>9</sup>, Subversion<sup>2</sup>

**Electronic Design** KiCad<sup>1</sup>, LabVIEW<sup>1</sup>, OrCAD PSpice & PCB Editor<sup>2</sup>, SimuAid<sup>1</sup>

**Hardware Description Language** Verilog<sup>1</sup>, VHDL<sup>3</sup>

**Microcontroller** ARM Cortex-M<sup>2</sup>, ATmega32U4<sup>2</sup>

**Networking & Communication** Routing & switching<sup>15+</sup>, SSH<sup>12</sup>, TCP/IP<sup>15+</sup>, UART<sup>12</sup>

**OS** GNU/Linux (x86\_64<sup>15+</sup>, ARM<sup>8</sup>), macOS<sup>1</sup>, Windows Desktop<sup>15+</sup>

**Programming & Scripting** Assembly (HCS12)<sup>1</sup>, C<sup>4</sup>, C#<sup>1</sup>, C++<sup>3</sup>, JAVA<sup>2</sup>, Python<sup>8</sup>, Shell<sup>15+</sup>

**Software-Defined Radio** REDHAWK<sup>4</sup>

**Storage** NAS<sup>12</sup>, RAID<sup>7</sup>, SAN<sup>4</sup>

**Virtualization & Containerization** Docker<sup>2</sup>, QEMU/KVM<sup>6</sup>, VirtualBox<sup>8</sup>

**Web** Apache<sup>4</sup>, CSS<sup>2</sup>, Domain management<sup>4</sup>, HTML<sup>4</sup>, PHP<sup>2</sup>

\* superscript denotes years of experience

## EDUCATION

### University of Texas at San Antonio (3.43 GPA)

Aug '07 – Dec '11

Degree Conferred: BS, Electrical Engineering  
Minor: Computer Science  
Concentration: Computer Engineering

### Northwest Vista College (3.88 GPA)

Aug '05 – May '07

Major: Engineering

## PERSONAL PROJECTS

### COMPUTING

- Creator of RISC-V Laptop Working Group (inc. lkcl, Purism, SiFive, others) – '18
- Custom x86/ARM single-board computer (SBC) cluster laptop design & construction – '17
- Pocket-size VNC thin-clients – '16
- Analog/digital circuit construction (transmitters, digital logic, etc) – '12
- Uncompressed .avi steganography (presented at Black Hat Abu Dhabi): C – '11
- Software-based audio synthesizer: Arduino Uno – '10

### ROBOTICS

- Technical lead & software developer in autonomous fire suppression system – '11
- UTSA IEEE robotics team – '09-'10

### AUTOMOTIVE

- Comprehensive automatic to manual transmission & drivetrain conversion – '11
- Mechanical & electronic development of the UTSA Formula SAE race car – '07-'09