Paul Alexander Horton

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SUMMARY

Software Engineering and Applied Physics honors student with experience in computational astrophysics and embedded systems. Interested in astrophysics, quantum computing, software development, and humanitarian design.

EDUCATION

Arizona State University – Polytechnic Campus, Mesa, AZ

Software Engineering M.S., Ira A. Fulton Schools of Engineering — GPA: N/A – **May. 2019**
Software Engineering B.S., Ira A. Fulton Schools of Engineering — GPA: 4.06 – **May. 2018**
Applied Physics B.S., College of Integrative Sciences and Arts — GPA: 4.01 – **May. 2018**
Barrett, the Honors College

RELEVANT COURSES

Quantum Mechanics I – III	Classical and Modern Physics	Data Structures and Algorithms
Vector Mechanics	Statistics and Numerical Analysis	Operating Systems
Mathematical Methods	Embedded Systems	Software Enterprise I – V

SKILLS

Experienced in Python data processing and communications networking.
Experienced in user centered software design and implementation for the developing world (Tonga, Samoa, and Kenya).
Involved in academic research in engineering education and computational physics.
Familiar with astronomical instrumentation and FPGA development.

RESEARCH

Quantum Key Distribution Thesis, *Astronomical Instrumentation Lab*, Tempe, Arizona Jan. 2017 – Pres

- Primary investigator on a research team to create a quantum cryptography setup using optical communications.
- Writing a senior honors thesis on information theory and its relation to quantum information.
- Developing FPGA firmware to manage a quantum encrypted communications tunnel.

Project Based Learning at Hackathons, *Maker Research Group*, Mesa, Arizona Aug. 2016 – Aug. 2017

- Applied deductive thematic analysis to write a conference paper analyzing hackathon teams through the project based learning framework.
- Collected first hand data from hackathon teams through semi-structured ethnography and interview protocols.
- Collaborated with engineering education researchers to examine nontraditional learning environments.

PROJECTS

SolarSPELL, *Design for the Developing World*, Tempe, Arizona Aug. 2016 – Pres

- Maintaining and updating a portable offline database of documents and videos useful for educators of developing nations in the South Pacific.
- Lead developer on a team of software engineers migrating SolarSPELL from a LAMP to a MEAN stack.
- Implemented final products in schools across the South Pacific through technical trainings to Peace Corps. Volunteers and their local teacher counterparts.

MERC File Server, *Maasai Education, Research, and Conservation Institute,* Talek, Kenya June 2017

- Established a file management server on a Raspberry Pi using Node.js for archival land rights research.
- Developed in a low resource environment and ensured availability regardless of hardware or network limitations.
- Employed user centered design amongst social scientists and Maasai researchers to ensure usability.

EXTRACURRICULAR GROUPS

Desert Hacks, Student Organizer, Tempe, Arizona Jun. 2016 – Pres

- Organized a large scale 24-hour programming competition by facilitating logistics, graphic design, and sponsorship.

Computer Science Club, Officer, Mesa, Arizona Jan. 2015 – Pres

- Collaborating with a leadership team to produce meaningful workshops, career opportunities, and programming events for undergraduate computer science and software engineering students.

Broadening the Reach of Engineering through Community Engagement, Mesa, Arizona Aug. 2016 – Pres

- Engaged with interdisciplinary engineering undergraduates to teach K-12 students the engineering design process through creative chain-reaction machines.