Mike Mabey, Ph.D.

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EXPERIENCE

Backend Engineer 3 - Product *Jul 2019 – Jul 2023*
Cedar Cares, Inc. Salt Lake City, UT
Supervisor: Tristan McCormick (651) 494-8503 tristan@cedar.com

- Initially hired by OODA Health, Inc., which was acquired by Cedar in Jun 2021.
- Authored and open-sourced `pyredox`, a **Python** library that aids in parsing, validating, and generating JSON payloads for communicating with Redox Engine, a clinical data broker.
- Used **Domain-Driven Development** (DDD) patterns while refactoring a batch-based **Python** service to be event-based, reducing client data refresh times from 30 minutes (average) down to a few seconds.
- Implemented tools that identified, parsed, and presented clinical information relevant to claims and prior authorization requests to decrease the time needed for payers to process and adjudicate requests. Technologies used include **Python**, **gRPC**/**protobufs**, AWS (**EC2**, **SQS**, **S3**, and **KMS**), **MariaDB**/**Postgres**, **OpenCV**, **OAuth**, as well as the X12 **EDI** and **FHIR** data formats.
- Led the effort to integrate with two electronic health record (EHR) systems, Cerner and Epic, using the FHIR specification; included acting as technical point-of-contact during certification by Cerner.
- Implemented many **ETLs** in **Python** for transforming external data to match internal structures and vice versa.
- Wrote **Swagger** documentation for customers connecting to our API implemented in **FastAPI**.

Computer Scientist (U.S. Army Civilian) *Dec 2017 – Jun 2019*
Data Science Directorate, Network Enterprise Technology Command (NETCOM) Phoenix, AZ

- Designed, implemented, and deployed analytics for the Army's instance of DISA's **Big Data Platform (BDP)**, including an app for monitoring vulnerability patching compliance and a dashboard for visualizing performance of information technology service management (ITSM) ticket resolution. Analytics were composed of a web interface using **Python**, **Flask**, **Vue**, and **Bootstrap**, with **pandas** for the data analysis, **Plotly** for the visualizations, and **Celery** and **redis** for task management.
- Shortened the development cycle for BDP apps by automating the build, packaging, and deployment process using **Python** and GitLab's **Continuous Integration** utility.
- Acted as technical liaison during fiscal year 2018 for a $3 million contract with Sandia National Laboratories to implement various analysis tools. Reported to leadership on Sandia's progress and assessed the value of the delivered products.
- Technical lead for developing NETCOM's relationship with ASU. Led strategic discussions with ASU's Global Security Initiative (GSI) leadership to collaborate on real-world NETCOM issues. Spearheaded the effort for ASU to gain access to an instance of the Army's BDP for improved technical collaboration. Served as the Army's program lead for the ASU Computer Science Capstone initiative.
- Initiated a culture in the Directorate of using **git**, **GitLab**, and DevOps methods and established internal best practices for collaborating on code development and documenting lessons learned.

Adjunct Professor *Jan 2019 – May 2019*
Arizona State University Tempe, AZ

- Taught CSE 469 Computer and Network Forensics which covered basics and history of digital forensics, proper forensic processes, hard drive geometry, volume analysis, file systems (ext4 in particular), and forensic techniques for email, mobile devices, web environments, and the cloud.
- Designed and taught a senior-level, technically advanced course (CSE 469) with innovate homework, group projects, and in-class labs to apply the processes and principles of digital forensics by writing forensic programs and by using industry-standard software to analyze evidence. Exposed the students to cutting-edge and seminal forensic research papers by a literature review of novel scientific methods and techniques to acquire, store, analyze, and present digital forensic evidence.

Research Assistant *Nov 2009 – Dec 2017*
Security Engineering for Future Computing (SEFCOM) Lab, ASU Tempe, AZ
Lab Directors: Gail-Joon Ahn, Adam Doupé, Ziming Zhao, Yan Shoshitaishvili
Sponsors: Department of Energy, National Science Foundation

- Implemented a forensic tool in **Python** that uses the G Suite APIs as a proxy for analyzing encrypted **Chromebooks** to reconstruct the timeline of events of an incident.
- Created a method for identifying extensions installed on **Chrome OS** by analyzing the encrypted files on the hard drive. Wrote an accompanying crawler in **Python** (and using **Ansible**, **Celery**, **MySQL**, **sshfs**, and **OpenStack**) to download all extensions on the Chrome Web Store and analyze them.
- Helped design and implement a cloud-based version of the International Capture the Flag (iCTF) competition, allowing educators to more easily host their own CTF competitions. Used **Ansible**, **Vagrant**, **Amazon EC2**, and **Python** for the implementation and deployment.
- Developed a forensic acquisition approach for web email that reestablishes persistent cookie sessions stored by a browser, and automated the process using **Python** and **Selenium**.
- Designed and implemented the core components of a modular, highly scalable, collaboration-centric digital forensic framework built on the **OpenStack** cloud architecture. Functions of the components included distributed job scheduling, storage management, and concise evidence representation and transmission.
- Maintained fifteen servers for the lab, including a public-facing router, an **OpenVPN** server, a reverse-proxy web server with **TLS** certificate management, an **OpenStack** cloud, switches transmitting **VLAN**-tagged traffic, and a **GitLab** server.

EDUCATION

Ph.D. Computer Science — Information Assurance *Dec 2017*
Arizona State University Tempe, AZ

M.S. Computer Science — Information Assurance *Aug 2011*
Arizona State University Tempe, AZ

B.S. Computer Science — Information Systems *May 2009*
Utah State University Logan, UT

AWARDS AND ACTIVITIES

- Promoted from GS-11 to GS-12 (Army) *Dec 2018*
- Achievement Medal for Civilian Service *Oct 2018*
- DoD Information Assurance Scholarship Program (IASP) Recipient (5 years) *2012 – 2017*
- Team Leader — ASU team in the UCSB International CTF *2009, 2010, 2014, 2015*
- Inducted into Eta Kappa Nu (HKN) Engineering Honors Society at ASU *Nov 2010*
- Eagle Scout, Boy Scouts of America *2002*