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Corwin A. Perren

Education

June 2019 **B.S. Computer Science**, *Oregon State University*, Corvallis, OR
GPA: 3.21 | Program Focus: Mobile, Embedded, and Connected Robotics

Experience

Sept. 2019 – Apr. 2025 **Hardware Test Engineer I/II**, *Space Exploration Technologies Corp. (SpaceX)*, Redmond, WA & Remote

Developed, owned, fabricated, debugged, and maintained critical software, hardware, and infrastructure to enable and support high-rate/high-reliability validation of space-bound hardware, and support effective team operations

- Owned, developed, and completed the consolidation, automation, and containerization of all Components Test team infrastructure, applications, and python modules
  - Unified all team applications into a dedicated monorepo, along with default templates enabling rapid new project startup
  - Converted all deployable applications to containerized, de-duplicating work via intermediate images per common project type
  - Created controlled python modules for common test team code
  - Created commonized Makefiles for the repo, plus tailored versions per application, allowing for fast local development which mimicked production tests/deployments and provided common interfaces when deploying
  - Added Sentry failure monitoring to all applications, including local development runs, to simplify failure resolution
  - Created and maintained ansible playbooks for the end-to-end ci/cd of the team's containerized applications and python modules, as well as test-system/server commissioning and management. Tasks included:
    - CI/CD
      - Build, test, validation, deployment, and cleanup of application containers via pull request and merge triggers, with the inclusion of database backup and restore for production-like runtime in all environments
      - Deployment with self-recovery and auto-start of networks and containers for development, staging, and production environments
      - Templating and management of NGINX virtualhost/load-balancing configurations, alongside ACME certificates and firewall management, for development, staging, and production environments
      - Upload of passing container, and custom python package, builds to Artifactory
    - Test System/Server Commissioning and Management
      - Commissioning and association of new servers/vms with core SpaceX infrastructure such as HashiCorp Vault
      - Automated installation and association of server monitoring tools with central monitoring infrastructure
      - Management and updates to system and baseline packages
      - Automatic interface, network, and application runtime configuration
      - Automatic downstream network switch configuration for applying vlans, trunking, and configs
  - Owned, managed, and greatly improved monitoring of team infrastructure, test systems, and applications
    - Configured and managed the team's Sentry instance, which greatly increased our team's ability to triage and solve critical application errors quickly
    - Owned and managed the Grafana instances for both Components Test and Starlink Hardware Test teams, providing useful insight into hardware/software bottlenecks, statuses, and metrics. Created and maintained the following dashboards:
      - System metrics monitoring such as cpu, network, memory, and disk usage to quickly find and eliminate hardware bottlenecks
      - Per-application metrics such as connection counts, unique users, response times, load-balancing status, etc... to help find pain points and ensure applications remained stable and responsive
      - Per-product and per-test metrics to help identify common failures for devices-under-test, as well to to evaluate any out-of-family measurements
    - Helped manage the Component Test team's OpsGenie integrations and schedules, and responded to pager tickets for the infrastructure sub-team
  - Developed shared python modules, restful flask apis, angular websites, and associated unit tests, for test team infrastructure and websites
- Designed, fabricated, commissioned, deployed, and supported test system hardware/software for Starlink satellite flight computers and power boards including full python test software suites, drivers, PCBs, wiring harnesses, and mechanical fixtures
  - Delivered ~4500 flight computers from four flight hardware generations, and ~4000 power boards from two flight hardware generations, to orbit

Jan. 2019 – Mar. 2019 **Avionics Test Engineer (Intern)**, *Space Exploration Technologies Inc. (SpaceX)*, Hawthorne, CA

Developed python drivers/modules, debugged hardware test-fixtures, and automated Jira workflows

Skills

Most Linux (Ubuntu, CentOS, NixOS) | TDD | Python | Bash | Docker | Ansible | Git | Atlassian Suite | Sentry | NGINX | Grafana

Some Makefiles | HashiCorp Vault | Bitwarden | Artifactory | Puppet | Web Full Stack Development

Least Kubernetes | Google Cloud Platform | Amazon Web Services | Prometheus | Subversion | C++ | C#

Hobbies/Interests

Linux (NixOS) | Home Automation | Homelab | Motorcycling | PCB Design | 3D Modeling & Printing

References available upon request. Detailed experiences are available on my website.