Jimmy Pentz

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Professional Summary

Embedded systems engineer transitioning into network engineering, with hands-on experience in TCP/IP and UDP communication, Linux system administration, and network automation. Experienced in designing and deploying networked systems, debugging complex embedded-network interfaces, and automating network configurations to improve lab efficiency. Currently pursuing an M.S. in Network Engineering.

Skills

Networking & Protocols: ARP, STP, TCP/IP, UDP, IPv4/IPv6, OSPF, DNS, DHCP, NAT, VLANs
Systems & Tools: Linux (Debian, RedHat), Bash, Ansible, Nginx, Git, SSH, Wireshark
Programming: Python, C, Javacsript/TypeScript, HTML/CSS
CI/CD & Automation: GitLab CI, GitHub Actions, Ansible

Experience

Embedded Software Engineer August 2018 – Present
FIRST RF Corporation *Boulder, CO*

- Automated MikroTik switch deployment with a Python script that configured port-based DHCP assignments, ensuring consistent testbed setups; deployed across 10 lab switches used by all engineers.
- Developed and maintained Ethernet-based UDP communication interfaces in Python and C to enable packet-based messaging between distributed RF devices; integrated auto-generated API documentation for streamlined integration
- Designed and implemented a user-friendly UI/UX interface for a radio mesh network web GUI using React and Typescript, with a Python back end (FastAPI), and deployed it on 10 radios with Ansible
- Redesigned an internal antenna plotting tool to address limited features and slow performance. Trying to open-source the development of the new web-based version. Utilized React and TypeScript for the front end and Python for the back end
- Led a cross-functional team of 5 members in an antenna R&D effort, managing technical specifications and fostering collaboration across teams to ensure timely project delivery
- Engineered a cross-platform bootloader to load new firmware on antennas that have been shipped to customers. Initially written in Python, later rewritten in Go for a 200% speed increase
- Utilized GitLab CI/CD tools to implement semantic versioning, unit testing, linting, and artifact generation

Education

University of Colorado Boulder, CO
Master of Science in Network Engineering *Expected Spring 2027*

University of Colorado Boulder, CO
Bachelor of Science in Electrical Engineering *August 2011 – December 2015*

Projects

Linux System Administration

- Configured and managed a network of 7 VMs (Debian and Red Hat) with ISP, DMZ, and internal segments, routing all traffic via a gateway machine
- Deployed VMs as router, file server, DNS/backup DNS, web/backup web server, and experimental FreeBSD node
- Applied Linux administration skills: bash scripting, user/access management, PAM, web servers, DHCP, DNS, NFS/NTP, firewalls, storage, and configuration management

Network Engineering

- Configured Cisco 2960 switches and 3750 routers via console and access server; secured devices with encrypted passwords and enabled SSH/Telnet for remote management
- Designed and implemented multi-VLAN networks with VTP server, inter-VLAN routing (ROAS), EtherChannels, and STP/RSTP convergence
- Applied IP subnetting across multiple routers/switches; implemented static routing, then migrated to RIP and EIGRP with metric tuning for dynamic routing