

# Jimmy Pentz

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## PROFESSIONAL SUMMARY

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M.S. Network Engineering student with a background in embedded systems, focusing on network automation, programmability, and scalable network operations. Hands-on experience with routing, switching, and Python-driven automation in lab environments.

## SKILLS

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**Networking & Protocols:** OSPF, BGP, ARP, STP, TCP/IP, UDP, IPv4/IPv6, DNS, DHCP, NAT, VLANs

**Systems & Tools:** Linux (Debian, RedHat), Bash, Git, SSH, Wireshark

**Programming:** Python, C, Javascript/TypeScript

**Network Automation & DevOps:** Netmiko, NAPALM, Jinja2, ZTP, SNMP, GitLab/GitHub (CI/CD)

## EXPERIENCE

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### Embedded Software Engineer

Aug. 2018 – Dec. 2025

*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
- Utilized GitLab CI/CD tools to implement semantic versioning, unit testing, linting, and artifact generation

## EDUCATION

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**M.S. in Network Engineering** - University of Colorado Boulder, May 2027 (GPA 4.0)

**B.S. in Electrical Engineering** - University of Colorado Boulder, Dec. 2015

## PROJECTS

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### Network Automation

- Collected network device state using management protocols and active scanning to identify running services, exposed ports, and potential security risks
- Developed Python scripts to generate custom packets, gaining hands-on understanding of protocol fields, headers, and packet flow
- Automated the deployment of iBGP peering between routers using configuration-driven scripts, including credential handling and automated verification of peering state and connectivity
- Built ZTP workflows using Flask to automate "day-zero" device deployments

### Network Engineering

- Hands-on experience with Cisco switches and routers, implementing layer 2/layer 3 protocols and packet analysis
- 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 routing protocols, using metric tunneling for dynamic routing
- Configured multi-area OSPF with route summarization and route redistribution, and implemented Virtual Routing and Forwarding (VRF) instances
- Deployed static and dynamic NAT, PAT, ACLs, and HSRP to interconnect and secure multiple network segments

### 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