Pavani Kuppili

Pavani Kuppili is a third-year PhD student at the University of Utah, advised by Prof. Robert Ricci. Her primary research interests are broadly in the areas of Programmable Networks, Data Center Networking, and Network Measurements. She is actively working on programming Tofino switches and FPGA-SmartNICs using P4. She collaborates with Prof. Michael Zink at the University of Massachusetts, Amherst, and Prof. Miriam Leeser at Northeastern University.

pavanikuppili www.linkedin.com/in/pavani-kuppili
pavani.kuppili@utah.edu kpavani2022@gmail.com

EDUCATION

Ph.D. Computer Science Fall 2023 – present
Research Work: GPA: 3.89/4.00

- Developed Dummynet-style programmable path emulator on a Tofino switch to precisely induce tens of micro-seconds of delay, fix packet reordering, and perform at near 87% line rate (Upcoming submission).
- Modeled non-rewiring network topology and studied E2E latency using P4 programming on a Tofino Switch, and reduced number of ports needed by 50%, and reduced latency by 20%.

B.Tech. Electronics and Communication Engineering 2015 – 2019
National Institute of Technology Silchar, India GPA: 7.41/10.00

RESEARCH EXPERIENCE

University of Massachusetts at Amherst | Cloud Testbed Development Intern May 2024 – present
Advisor: Prof. Michael Zink & Prof. Miriam Leeser (Northeastern University)

- Developed clock-independent measurement framework for P4 programs on FPGA-based SmartNICs (Previously submitted at PAM'26. Currently under resubmission).
- Designed P4 program using Vitis Networking P4 to configure VLAN based loopback path on FPGA-SmartNICs.

Undergrad Research | National Institute of Technology Silchar, India 2015 – 2019

- Designed network with multi-routing protocols on GNS3, utilizing static and dynamic routing protocols, analyzed with Wireshark.
- Proposed Stub Network resolution for complex network topologies to ease administration, and save IPv4 space.
- Developed a state-of-the-art optical virtual private network (OVPN) emulation platform using Java, and MySQL; revolutionized pre-deployment planning by predicting optical network routes, saving 50% of manual calculation time.

Publications

- **Kuppili, Pavani**, Aleksander Maricq, Brent E. Stephens, Ryan Stutsman, and Robert Ricci. Poster: Topocloud: Getting datacenter network experiments into the right shape. In *2024 IEEE 32nd International Conference on Network Protocols (ICNP)*, pages 1–2, 2024
- **K., Pavani**, S. K. Tripathy, and P. Puspa Devi. Design and analysis of qos based optimized novel optical network emulator for wdm technology. In *2019 International Conference on Intelligent Computing and Control Systems (ICCS)*, pages 1261–1265, 2019
- **Pavani, K.**, Himanshu Mishra, and Ramkumar Karsh. Multi-attached network topology with different routing protocols and stub network resolution in ospf routing. In Vijay Nath and Jyotsna Kumar Mandal, editors, *Proceedings of the Third International Conference on Microelectronics, Computing and Communication Systems*, pages 129–141, Singapore, 2019. Springer Singapore
- Himanshu Mishra, Ram Kumar Karsh, and **Pavani, K.** Anomaly-based detection of system-level threats and statistical analysis. In Atilla Elçi, Pankaj Kumar Sa, Chirag N. Modi, Gustavo Olague, Manmath N. Sahoo, and Sambit Bakshi, editors, *Smart Computing Paradigms: New Progresses and Challenges*, pages 271–279, Singapore, 2020. Springer Singapore

WORK EXPERIENCE

Amazon Development Center India(ICON) | Systems Development Engineer January 2022 – July 2022

- Designed automated scaling scripts in Javascript to address downtimes of Amazon Retail Website and could resolve over 70% of on-call tasks.
- Executed the 100% live migration of Amazon Retail Website across global regions from legacy load balancers to AWS ELBs.

Amazon Web Services India(EC2 Linux) | Cloud Engineer May 2019 – January 2022

- Debugged a critical bug in AWS SSM Agent and collaborated with cross-functional teams to enable integration of Custom OS logs with CloudWatch; mitigated 100% Custom OS SSM logging errors.
- Resolved over 1000 customer cases, architecting multi-tier cloud solutions on AWS, optimizing resources, infrastructure costs, and performance.
- Troubleshot and resolved AWS EC2 level critical performance and application issues by re-configuring Linux operating systems on cloud using CPU, Memory, Storage, and Network metric analysis, and optimizing system utilization.

SKILLS

Systems/Network: Tofino, Vitis Networking P4, Xilinx open-nic-shell, CloudLab, Linux, AWS, Docker, GitHub, MapReduce, Network monitoring, Network Performance, Firewalls, Virtualization, OS Logging, Authentication, GNS3, Wireshark
AI: Core ML, Supervised learning, Ensemble methods, Neural Networks, Sklearn, ApacheSpark, JupyterLab
Programming: P4, Python, SQL, C, Bash/Shell, Java, Go, OpenMP, CUDA, MPI, LaTeX, JavaScript, HTML, CSS

AWARDS, HONORS & CERTIFICATIONS

Artifact Evaluation Committee, ICPE 2026 | Florence, Italy 2026
Member ShadowPC, EuroSys 2024 | Athens, Greece 2023-2024
Quarter Superstar AWS | Amazon Web Services, India. 2020
AWS Solutions Architect-Associate 2020