

CAREER SUMMARY

Ph.D. candidate in Computer Science specializing in programmable network security for Smart-Grid/ICS/OT with 7+ publications in top-tier IEEE/ACM venues and Best Paper Award recognition. Combines research expertise in programmable networks, security frameworks with industry experience in cloud orchestration, 5G networks, and software validation.

EDUCATION

<i>Ph.D. in Computer Science</i> , University of Arkansas, Fayetteville, AR	Aug 2021 – Sep 2026
<i>M.S. in Computer Engineering</i> , University of Arkansas, Fayetteville, AR GPA – 4.0/4.0	Aug 2021 – Dec 2024
<i>B.E. in Electronics and Communication Engineering</i> , College of Engineering, Guindy, Anna University, Chennai	Aug 2006 – June 2010

SKILLS

Languages	: Python, P4(Tofino, bmv2), C, Bash
Networking	: SDN, P4, 5G Core, EPC, TCP/IP, Mininet, Wireshark, iperf
Cloud & Orchestration	: Kubernetes, Docker, OpenStack
Security	: ICS/OT (Modbus, DNP3) Network Security, IDA Pro, PE Studio
Tools	: Linux, Git, FastAPI, OpenCV, NVIDIA GPU Stack

WORK EXPERIENCE

University of Arkansas , Fayetteville, AR	
<i>Graduate Research Assistant</i>	Aug 2021 – Present
→ Independently research on secure Smart Grid/ICS networks using P4-programmable switches (Tofino, bmv2)	
→ Act as the go-to person for P4-related issues, including Tofino setup, coding and advising lab peers on technical solutions	
→ Mentor and provide research directions for undergrads on thesis projects	
→ Recognized by advisor for research independence, peer-level contributions, and leadership, including stepping in to teach and moderate discussions for class	
Nokia Bell Labs , New Providence, NJ	
<i>Network Architecture Intern</i>	Jun 2023 – Aug 2023
→ Deployed Kubernetes clusters on Nokia Airframe servers, simulating multi-cloud setups	
→ Optimized YoLov7-based object detection by transforming it into a FastAPI REST service, reducing RTT latency from 500 ms to 30 ms	
→ Integrated NVIDIA GPU plug-ins with Kubernetes to enhance GPU utilization for inference pods	
→ Scaled the video inference system, enabling real-time webcam feed processing with OpenCV	
Cisco Systems , Bangalore	
<i>Software Engineer</i>	Jun 2020 – Jul 2021
→ Conducted integration and end-to-end testing for Cisco's 5G Core Network Functions – SMF, UPF, PCF, and SGW	
→ Deployed and managed Kubernetes-based software deployments in production environments	
→ Uncovered several critical bugs on RADIUS interface	

Parallel Wireless, Bangalore
Member of Technical Staff

Oct 2018 – May 2020

- Performed QA validation for Parallel Wireless' gateway products – TWAG (WiFi gateway) and SAEGW
- Validated different call models in TWAG – SIM based, portal authentication, end-to-end qualification
- Developed Python automation for SAEGW Gx-interface tests; reduced manual test execution time by ~60%

Nokia Networks, Bangalore
R & D Engineer

Apr 2015 – Oct 2018

- Software validation for Nokia's Home Subscriber Server (HSS) and 5G UDM Network Function
- Hands on experience with VNF bring up on OpenStack, Nokia CBAM (Cloud Band Application Manager)
- Led test strategy for HSS/5G UDM VNFs, improving defect detection before customer deployments and reducing field issues

Cisco Systems, Bangalore
Software Engineer

Apr 2012 – Apr 2015

- Performed software verification on Cisco StarOS ASR 5000, ASR 5500 SGSN gateway nodes
- Developed and maintained automated regression test suites for SGSN features using TCL scripting, enhancing Cisco's test automation framework for improved efficiency

SELECTED PUBLICATIONS

1. **Reuben Samson Raj** and Dong Jin. *A Framework to Evaluate PMU Networks for Resiliency Under Network Failure Conditions*, 2022 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)
 2. **Reuben Samson Raj** and Dong Jin. *Dynamic Data Driven Security Framework for Industrial Control Networks using Programmable Switches*. 5th International Conference on Dynamic Data Driven Application Systems (DDDAS 2024)
 3. **Reuben Samson Raj** and Dong Jin. *Leveraging Data Plane Programmability Towards a Policy-driven In-Network Security Framework for Industrial Control Systems*. 16th ACM International Conference on Future and Sustainable Energy Systems (e-Energy 2025)
 4. Sarvesh Bidkar, Rakesh Abbireddy, Maryam Amiri, **Reuben Samson Raj**, Anil Rana, Jeff McLaird, Paul Rea, Meryem Simsek and Jesse E. Simsarian. *Demonstration of Multi-Provider Network and Cloud Service Provisioning with Blockchain Smart Contracts*. The 51st European Conference on Optical Communication (ECOC 2025)
- Full list [here](#).

AWARDS AND HONORS

- 2nd place - Best Paper Award, DDDAS 2024
- Reginald R. Barney & Jameson A. Baxter Graduate Scholarship (2023, 2022)
- Department of Electrical Engineering and Computer Science Scholarship (2023)
- You Amaze and You Inspire awards (2020), CAP Award (2013), Cisco
- Best Feature Team Award (2016), Nokia

ACADEMIC SERVICE

- Journal Reviewer, *ACM Transactions on Modeling and Computer Simulation (TOMACS)*, 2025

VOLUNTEERING

- Key Organizer, *EECS High-School Programming Contest* (2024, 2025 and 2026)
- In charge of technical liaison with coding platform vendor, testing and onboarding group of volunteer judges