PALLAVI SHARMA

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Professional Experience

Altair Engineering, India **Nov 2023- Present**

Software development engineer

● I developed features for both PBS Pro and Liquid Scheduler (LQS), revolutionizing the capabilitites of these powerful workload management systems.

● I implemented backend GraphQl APIs for LQS, driving seamless integration between pBS Pro and LQS, thereby optimizing workflow efficiency and enhancing system interoperability.

Altiostar Networks (Rakuten Symphony), India **Dec 2021- Nov 2023**

Member of Technical Staff

● I developed a versatile Test Utility Framework (TUF) using Golang and Protobuf to efficiently encode and decode 5G protocol data against a commercial 5GC.

● Within TUF, I designed support for multi-version NAS/F1AP/NGAP encoding & decoding, flexible procedure crafting, and robust multi-session functionality with meticulous validation of incoming messages.

● I seamlessly integrated a user-friendly UI interface within TUF, utilizing Protobuf to swiftly convert UI inputs into JSON structures for streamlined parsing.

● I validated 5G protocols using TUF, orchestrating diverse NAS signaling scenarios through Python scripts and Wireshark captures.

● I implemented NETCONF subtree filtering for low-level operations, crafting a customized tool that automatically generated XML files from IETF Yang configuration files.

● Additionally, I engineered a comprehensive 5G RU simulator for both server and client roles over SSH and TLS connections.

● I designed microservices gRPC APIs for seamless session management, amplifying the RU simulator's capabilities with Callhome support and the ability to host multiple sessions.

● I conducted rigorous testing and validation of the 5G RU simulator using automated Python scripts.

AvGarde Systems, India **Jan 2021- Apr 2021**

Student Internship

● I adeptly conducted simulations and validations, leveraging NI LabVIEW and advanced Image Processing methods.

● Within NI LabVIEW, I skillfully utilized Image Processing to identify faults and lesions on various materials, including wood and aluminum sheets.

● I implemented and meticulously validated the MUSIC algorithm in NI LabVIEW, accurately determining transmission angles for antenna arrays.

Centre for Airborne Systems- DRDO, India **Jun 2019- Aug 2019**

Summer Internship

● I conducted comprehensive simulations and tests on an Electrical Rig designed for a twin-engine aircraft system. I employed Siemens' AMESIM software, adjusting parameters to ensure thorough analysis.

● I initiated a Proof of Concept (POC) to determine the optimal software for simulating the Electrical Rig. After careful evaluation, I identified Siemens' AMESIM as the most suitable choice, comparing it with MATLAB Simulink.

Technical Expertise

● **Programming Languages:** Golang, Python, C, C++, HTML5, CSS

● **Tech Stack:** Data Structures, Multi-threading, Bash, Scripting, gRPC-Go, Microservices, JSON Schema, Protocol Buffers (Protobuf), Protobuf-Python, Protobuf-Go, file descriptors, text template, System level RPC, SSH, TLS, SCTP,

JSON, XML, YAML, YANG, Makefile, Python, Asyncio, JSONPatch, Pycrate, TCPDump, Image Processing (OCR), Machine Learning

- **Tools:** TCP dump , MobaXterm**,** Wireshark, VS Code, Postman, Pycharm, MATLAB, NI Multisim, NI LabVIEW, Arduino IDE
- **Network Protocols & Technologies:** Network Protocols (e.g. NAS, F1AP), NETCONF, 5G Network architecture, TCP/IP, OSI Model
- **Operating Systems:** Windows, Linux
- **VCS:** Git

Personal Projects

- **Standard & Implementation Patents League (SIPL)- *Rakuten Symphony in-house event*** **Apr 2023**
  - ✓ I created a POC that involved utilizing Machine Learning(ML) and a Man-In-The-Middle(MITM). This POC aimed to calculate real-time security scores for 5G network functions.
- **Ideathon- *Rakuten Symphony in-house event*** **Dec 2022**
  - ✓ I successfully executed a POC focused on user identity management, presenting a solution to eliminate hardcoded authentication for NETCONF servers.
  - ✓ I introduced TOTP-based 2-factor Authentication, seamlessly integrating support for Google Authenticator & Okta.
  - ✓ My team was Awarded ***The Best Idea Team*** for submitting the most ideas among 10+ participating team
- Flight fare prediction using Machine learning algorithm**- *University project*** **Mar-Jun 2021**
- **Kavach- *Smart India Hackathon (Hardware)*** **Feb-Nov 2020**
  - ✓ I designed smart clothing featuring a health monitoring system for defence forces.
  - ✓ I earned a place in the ***Grand Finale*** of the Smart India Hackathon.
- **Upasthiti**- ***University project*** **Jan-May 2020**
  - ✓ I designed an automated attendance system using Python's Image Processing & face recognition.
  - ✓ Additionally, I crafted a webpage for attendance display using HTML5 & CSS.

Education

- **Bachelor of Technology, Electronics & Communication Engineering** **Aug 2017- Jun 2021**

MS Ramaiah University of Applied Sciences, Bangalore, India **GPA- 9.50**

  - ✓ Awarded the coveted ***Gold Medal*** for exemplary ***Academic Excellence*** in the B. Tech (ECE) Class of 2021, surpassing 150+ peers.
- **12th (Senior Secondary Examination) CBSE Board** **Mar 2017**

Kendriya Vidyalaya 87.40%

- **10th (Secondary Examination) CBSE Board** **Mar2015**

Kendriya Vidyalaya 10 CGPA

Certifications

- Cisco NDG Linux Unhatched certification course **Mar 2021**
- C programming- Sololearn certification course **Mar 2021**
- Python programming for beginners - Coursera Certification course **Jul 2020**
- Machine learning using MATLAB -Coursera Certification course **May-Jul 2020**