Venkata Pavan Karthikeya Koppala

Applying for: Embedded Software Engineer | Linux Kernel | Networking

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Summary

Embedded Software Engineer with experience in Linux Kernel, Embedded Linux, RDK-B, OpenWRT, Yocto, Layer-2 Switching and GPON/XGS-PON networking. Strong expertise in Linux networking, packet processing, hardware offload, embedded firmware development, customer issue debugging and platform porting. Experienced in building AI-assisted engineering tools using Python, FastAPI, Computer Vision and Large Language Models (LLMs) to improve engineering productivity.

Experience

Software Engineer — Qualcomm India Private Limited — Feb 2026 – Present

- Working on Qualcomm Mobile Broadband (MBB) devices based on the Amboseli (SDX95) platform using the RDK-B software stack.
- Ported the Health Monitor framework from OpenWRT to RDK-B by migrating client, server and demo components.
- Developed and enhanced C++ modules supporting Health Monitor integration.
- Created BitBake recipes and integrated packages into the Yocto build system.
- Worked on **hm-ext**, **hm-ext-lib** and **health_monitor_demo** supporting client-server communication and end-to-end validation.
- Debugged build-time and runtime dependency issues and collaborated with global engineering teams during feature integration.
- Developed an AI-powered Gerrit Code Review Assistant used by **200+ engineers**, reducing code review preparation time for technical leads and managers by approximately **50%**.
- Developed an AI-powered Event Photo Finder indexing **10,000+ event photographs** using InsightFace, FAISS, FastAPI and ONNX Runtime.

Firmware Development Engineer — Senao Networks India Private Limited — Aug 2025 – Jan 2026

- Developed and debugged Layer-2 switch firmware using Embedded Linux and the Realtek SDK.
- Worked on VLAN, MAC Learning, multicast forwarding and Ethernet switching features.
- Investigated packet forwarding issues through packet-flow analysis and switch debugging.
- Built firmware using Docker-based build environments and Linux toolchains.
- Validated firmware using Wireshark, Spirent TestCenter and switch CLI.

Software Engineer — Airoha Technology India Private Limited (MediaTek Group) — Jul 2023 – Aug 2025

- Worked on GPON/XGS-PON ONT platforms including EN7523, EN7528, EN7529 and EN7581.
- Ported networking modules across multiple ONT platforms.
- Enhanced Linux kernel networking modules including Ethernet, HW NAT, HSGMII, XSI and Loop Detect.
- Enhanced and validated the kernel-based 10G Speedtest module.
- Investigated and resolved customer-reported networking issues for Ciena, Adtran, Kontron, Genexis and Tejas Networks.
- Debugged Linux kernel packet forwarding, hardware offload, multicast, Ethernet driver and rate-limiting issues.
- Validated GPON and Ethernet WAN functionality using Nokia OLT and Spirent TestCenter.

Projects

AI-Powered Gerrit Code Review Assistant

- Developed an internal AI-assisted tool that summarizes Gerrit code changes into structured reports using Large Language Models (LLMs).
- Integrated Gerrit REST APIs with a FastAPI backend for automated code analysis.
- Used by **200+ engineers**, reducing code review preparation time for technical leads and managers by approximately **50%**.

AI-Based Event Photo Finder

- Developed an internal face-recognition application using InsightFace, FAISS, FastAPI and ONNX Runtime.
- Indexed **10,000+ event photographs** enabling AI-powered image search.
- Built scalable facial embedding generation and similarity search for employee event photographs.

Breast Cancer Detection using Machine Learning

- Developed an ML pipeline for breast cancer classification using image segmentation and feature extraction techniques.
- Published in IEEE Conference.

Bitcoin Price Prediction using LSTM

- Developed an LSTM-based Deep Learning model for cryptocurrency price prediction using historical market data.

Education

Integrated M.Tech in Computer Science and Engineering (Data Science) Vellore Institute of Technology (VIT) Jul 2019 – May 2024

CGPA: 8.87 / 10

Relevant Coursework: Machine Learning, Deep Learning, Artificial Intelligence, Computer Networks, Operating Systems, Data Mining

Skills

Programming Languages: C, C++, Python, Bash

Computer Science Fundamentals: Data Structures & Algorithms, Operating Systems, Computer Networks, Object-Oriented Programming

Embedded Systems: Linux Kernel, Embedded Linux, OpenWRT, RDK-B, Yocto, BitBake

Networking: Ethernet, TCP/IP, VLAN, Multicast, QoS, DHCP, NAT, GPON, XGS-PON, HW NAT, Layer-2 Switching, Packet Processing

Artificial Intelligence: Machine Learning, Deep Learning, Computer Vision, Generative AI, Large Language Models (LLMs), FastAPI, FAISS, InsightFace, ONNX Runtime

Tools: Git, Gerrit, Docker, Wireshark, Spirent TestCenter, Nokia OLT, QXDM5, ALPACA, PCAT, Source Insight

Certifications

- AI Upskilling Certificate – Qualcomm Academy
- Python Crash Course – Coursera
- C with Data Structures – GeeksforGeeks

Publications

Breast Cancer Detection using Image Segmentation and Machine Learning Approaches

IEEE Conference Publication (2023)

Achievements

- Winner – MediaTek Badminton Premier League
- Group Stage Winner – Qualcomm Badminton Tournament