Sagar Patel

Senior Embedded Software Engineer

Portland, OR, United States | LinkedIn | Portfolio | GitHub

Embedded software engineer with 4+ years shipping carrier-grade Linux, networking, and edge AI systems across Jetson, ARM, and RTOS platforms.

Experience

Co-Founder and CTO May 2026 — Present
Stealth AI Startup
Healthtech startup - Details coming soon.
Supported by Remarkable Australia & Disability Tech Summit (Boston)

Embedded Software Validation engineer Jan 2026 — Present
Intel *Hillsboro, OR*

Senior Embedded Software Engineer May 2024 — Dec 2025
Ciena *Los Angeles Metropolitan Area*
Built and maintained embedded Linux networking firmware on NVIDIA Jetson Orin, optimizing packet processing and DMA paths to improve sustained throughput by 31%. Developed CUDA and TensorRT edge inference pipelines for real-time anomaly detection, reducing unplanned operational downtime by 22%. Owned BSP upgrades, secure boot validation, CI, and release management across production hardware, cutting bring-up timelines by 24%.

Software Engineer 2 (Firmware) Jan 2023 — May 2024
Cisco Systems *Austin, Texas Metropolitan Area*
Engineered P4-programmable switching firmware integrated with ASIC SDKs, improving forwarding stability and reducing packet loss by 31% at scale. Implemented AI-assisted traffic intelligence on NVIDIA BlueField DPUs with DOCA and ONNX, improving anomaly classification accuracy by 24%. Developed embedded Linux platform components spanning telemetry drivers, secure boot, and multi-platform CI for carrier networking systems.

Embedded Software Engineer Jul 2020 — Aug 2021
Tata Consultancy Services (TCS) *Remote, India*
Developed bare-metal RTOS firmware for ARM-based telecom edge nodes, implementing QoS shaping and multicast packet replication to improve delivery rates by 28%. Wrote kernel modules and device drivers for high-speed Ethernet interfaces, reducing packet jitter by 35% in distributed deployments.

Education

Sofia University Sep 2025 — Jun 2027
Master of Science - MS in Computer Science
Courses:
Machine Learning | Advanced Robotics

UC Irvine Aug 2021 — Dec 2022
Master's degree in Embedded and Cyber Physical Systems (Computer Engineering)
Courses:
Embedded System Software | Cyber Physical Systems Design | Embedded System Modelling and Design | Real-Time & Distributed Systems (Internet of Things) | Wireless Sensors & Networks | Machine Learning and Data Mining | Control Systems in CPS | Cyber Physical Systems Case Studies | Security & Privacy in Cyber Physical Systems

CHARUSAT Jul 2017 — May 2021
Bachelor of Technology - BTech in Electronics and Communications Engineering
Related Coursework:
Embedded Systems | Embedded Linux | Micro-controllers & Its Applications | Microprocessor & Interfacing | Data Communication & Networking | Digital Signal Processing | Control Systems

Projects

Development of Autonomous Drone for GPS-less Inspection

Light Control System
Interfacing of ESP8266 and Raspberry Pi with LDR Sensor and RGB Light sensor to monitor the light in the ambience and accordingly communicate using the Server and client model with WiFi, UDP, Python & C Programming and use of Arduino API of ESP8266, Pi GPIO and Serial Manager packages

Motion Detection System using Raspberry Pi
System implemented using Raspberry Pi functioning the continuous image and video capturing with interfacing of Raspberry Pi camera module v2 programmed in Python

Smart Email Notifications using BeagleBone Black
Python based project using the Beagle Bone Black board for automatic email notification on LCD as well as on email directly in the interval of 1 minute

Simple AI Jarvis using Python
Integration of various everyday functionalities in single voice control Python based software starting from the welcome greeting, sending the mails, returning the date, time, voice to text, text to voice, telling the battery percentage, taking screenshots with the applications of numerous Python libraries

Voice & Bluetooth Controlled Robot
Bot programmed in C language which is interfaced with HC05 Bluetooth Module with Arduino Controller Board which functions Bluetooth control mechanism and added voice control in the bot on 4 directions

Smart Rock Paper Scissors Game using Python

AVR Timer Module Design using Verilog

Traffic Light Controller System using Verilog

Obstacle Avoiding Robot using Arduino
Built and assembled the robot to develop the Embedded C algorithm for automatic obstacle avoidance based on Arduino UNO board using 3 HC-05 ultrasonic sensors placed on 3 sides

Library Management System using C++

Line Follower Robot
Infrared sensor-based robot developed with Arduino UNO board to detect the line and follow the path based on the transmitter and receiver of the sensor written in Embedded C

Local-first OTA updates for Linux edge devices with zero cloud dependency, Offline OTA Update System
Built a local-first OTA update system for Linux edge devices that delivers signed update bundles over USB or local HTTP. Implemented signature verification, staged release directories with atomic symlink switching, health-check-based promotion, and automatic rollback to last known-good release.

Incident intelligence platform for ROS2 and edge AI systems, Watchpoint
Built an incident intelligence platform that captures logs, metrics, ROS topics, inference timing, and hardware state into replayable failure bundles. Developed a lightweight Go edge agent cross-compiled for Linux/ARM and a ROS2 Python collector for topic-rate and node-health monitoring.

Self-maintaining encyclopedia for humanoid robotics using autonomous agents, Embodipedia
Built a self-maintaining encyclopedia for humanoid robotics where autonomous agents ingest tweets, papers, podcasts, and news, extract typed claims, and synthesize Wikipedia-style pages with inline citations. Separated evidence into canonical, bull, and bear HydraDB lanes so the system can render grounded debate, time-travel snapshots, and clean handling when evidence is thin.

Certifications

ML Engineer - Detecting Plastic Debris through Satellite Imagery in the Italian and Mediterranean Seas, Omdena — Jun 2025

Getting Started with Deep Learning, NVIDIA — Mar 2025

Machine Learning Crash Course, Google — Mar 2025

Getting Started with Accelerated Computing in CUDA C/C++, NVIDIA — Feb 2025

Nvidia - AI for All - Basics to GenAI Practice, NVIDIA — Feb 2025

Best Project Award, Issued by UC Irvine — Dec 2022

C, HackerRank — Jun 2021

Behavioral Analysis of Embedded Linux Device Drivers on BeagleBone Black, — Sep 2020

Embedded Hardware and Operating Systems, Coursera — Jun 2020

Introduction to Programming the Internet of Things (IOT) Specialization, Coursera — Jun 2020

Crash Course on Python, Google — May 2020

Embedded Linux using Beagle Bone Black, Udemy — May 2020

Embedded C, TLab Global — May 2020

NVIDIA-Certified Associate: Generative AI LLMs, NVIDIA

Skills

Machine Learning · Artificial Intelligence (AI) · CUDA · Linux Kernel · Robot Operating System (ROS) · Drones · Object-Oriented Programming (OOP) · Computer Vision · Algorithms · Data Structures · I2C · Universal Asynchronous Receiver/Transmitter (UART) · Troubleshooting · Linux System Administration · Microcontrollers · Shell Scripting · Internet of Things (IoT) · Proteus · Pycharm · Raspberry Pi · Generative AI · Problem Solving · Rust (Programming Language) · Python (Programming Language) · Arduino IDE · Embedded Systems · C++ · Embedded Software · Real-Time Operating Systems (RTOS) · MATLAB · Arduino · Linux · Embedded Linux · Embedded C · Device Drivers · Operating Systems · ESP8266 · Node-RED · Git · Firmware · Bash · BeagleBone Black · Python · Yocto · Buildroot · BSP integration · bootloaders · kernel · cross-compilation · IPC · memory management · TCP/IP · Ethernet · Layer 2/3 · P4 · DPDK · DMA · SPI · TensorRT · ONNX · JetPack SDK · DeepStream · DOCA · Jetson Orin · BlueField DPU · JTAG · oscilloscopes · logic analyzers · Docker · CI/CD · CMake · VS Code · Eclipse