

Pranav Kumar

Virginia, USA
+1 (540) 934 8078
✉ pranavkumar@vt.edu
🌐 pranav083.github.io
in pranav083
🔗 pranav083

Summary

Embedded Systems Engineer with 4+ years of experience in firmware development, real-time systems, and low-level hardware integration. Passionate about optimizing embedded architectures for performance and efficiency. Strong expertise in C/C++, RTOS, and kernel development.

Technical Skills

Languages C, C++, Python, Linux, LLVM, Compiler
Protocols ARM, I2C, SPI, CAN, UART, BoneBone, Raspberry Pi, ESP32
Tools Git, Docker, ROS, FreeRTOS, AUTOSAR, LLVM
Hardware STM32HF7x, TI, Steppers, BLDC, FOC, Xilinx FPGA Spartan
Familiar Algorithms, L^AT_EX, Shell, Parallel Programming

Education

Aug 2024 – **MS in Computer Engineering**, *Virginia Tech*, Virginia, USA
May 2026 GPA: 3.9 / 4
Coursework: Compiler Optimization, Multiprocessor Programming
May 2016 – **B.E in Electronics and Communication Engineering**, *UIET, Panjab University*,
Sep 2020 Chandigarh, India

Experience

Dec 2024 – **Graduate Student Researcher**, *SSRG Lab @Virginia Tech*, Virginia, USA
Present ○ Developing an indirect call mechanism for binary decompilation under Prof. Binoy Ravindran.
○ Exploring kernel-level instrumentation and code optimization.
May 2023 – **Embedded System Engineer**, *ARTPARK @IISc*, Bangalore, India
Jul 2024 ○ Designed low-level drivers and communication stacks for quadruped robotics.
○ Developed firmware for motor controllers (FOC, BLDC).
○ Implemented high-speed CAN protocols for real-time embedded Linux systems.
Jun 2021 – **Embedded System Engineer**, *Flux Auto Pvt. Ltd.*, Bangalore, India
Mar 2023 ○ Enhanced peripheral drivers for autonomous vehicles.
○ Designed firmware for multi-node CAN networks.
○ Developed RTOS-based firmware and system architecture.
Jan 2020 – **Embedded Firmware Engineer**, *Futuristic Labs Pvt. Ltd.*, Hyderabad, India
May 2021 ○ Developed device drivers and firmware abstraction layers for IoT systems.
○ Built kernel-space and user-space communication bridges.
○ Optimized interrupt-driven firmware for responsiveness and efficiency.

Projects

Jun 2019 – **Google Summer of Code**, *BeagleBoard.Org*, Chandigarh, India
Aug 2019 ○ Used BeagleBone and 74hck299 to design a bi-directional communication system.

Achievements

- 2019 ROSCon-19 Scholarship: Attendee at ROSCon-19, Macau, China.
- 2019 Excellence in Technology Award by Mrs. Kirron Kher, MP Chandigarh.
- 2019 1st Prize, Design and Idea Competition, IIC, Panjab University.
- 2019 Mentor of winning team at Smart India Hackathon-2019.
- 2021-2022 Three-time Best Employee of the Quarter, Flux Auto.