Pranav Kumar

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Education

Virginia Tech — Virginia, USA
MS in Computer Engineering — *3.9/ 4 GPA August 2024 – May 2026*

UIET, Panjab University — Chandigarh, IN
B.E in Electronics and Communication Engineering — *May 2016 – Sept. 2020*

Job / Research Experience

SSRG Lab @Virginia Tech — Linux, Kernel, Compilers, LLVM
Graduate Student Researcher — *Dec 2024 - Present, VA, USA*

- Working under Supervision of **Prof. Binoy Ravindran** on developing an indirect call mechanism for decompiling binary code.

ARTPARK @IISc, Bangalore — Arm4, BLDC-drivers, STM32, TI, CAN, FOC, ROS
Embedded System Engineer — *May 2023 – July 2024, Bangalore, IN*

- Worked Under Supervision of **Asst. Prof. Shishir N. Y. Kolathaya** on quadruped robot development.
- Designed system architecture and developed firmware and hardware for legged robotics.
- Led the development of the communication stack for the robot's operations.

Flux Auto Pvt. Ltd. — ARMm7, FreeRTOS, EclipseIDE, STM32, TI, BLDC, CAN, I2C, ROS
Embedded System Engineer — *June 2021 – March 2023, Bangalore, IN*

- Developed autonomous systems and retrofit kits for vehicles, including off-road **Tractor** and industrial machinery.
- Designed deployable embedded systems with decentralized multi-node CAN solutions.
- Created libraries and drivers for diverse ICs, integrating hardware and software solutions.

Futuristic Labs Pvt. Ltd. — ARMm4, FreeRTOS, esp-idf, OpenCV, Stepper, I2C, UART, Docker, Mqtt
Embedded Firmware Engineer — *Jan. 2020 – May 2021, Hyderabad, IN*

- Designed firmware for an autonomous cooking machine for Indian cuisine.
- Developed embedded solutions for hardware and IoT-based appliances
- Created a bridge between RTOS Board and Compute Module for system integration.

Technical Skills

Languages: C/C++, Python, Embedded C, OpenCV, Embedded Linux, Linux
Hardware Protocols: ARM, I2C, SPI, CAN, Modbus, UART, BeagleBone, Compute Modules(Rpi CM4), ESP32
Developer Tools: Git, Docker, LvGL, MqTT, ROS, FreeRTOS, AUTOSAR
Hardware : STM32H7x, TI, Steppers, BLDC, FOC, Xilinx FPGA Spartan etc.
Familiar: Algorithms, LaTeX, Shell, Yocto

Long Term Project

Google Summer Of Code(GSOC) — Device Tree, Kernel Module, PRU, ARMa8, Embedded C
BeagleBoard.Org(Open Source Contributer) — *June – Aug. 2019, Chandigarh, IN*

- Using BeagleBone and 74hc299 shift Register, provided a reference design for bi-directional commincation for multiple peripherials see Project **Page** and Beaglebone official blog **Page**, **Playlist** and **Github Repo**.

Research Work

- "Autonomous System of Heavy Vehicle Using CAN Networking" **Link** at **ICDEMI**, Bangalore through Springer - Nov 2024

Achievements And Awards

- 2019 – Robot Operating System Conference **ROSCon-19, Macau, China Scholarship Holder**.
- 2019 – Awardee for excellence in Technology field by **Mrs. Kirron Kher (MP, Chandigarh)**.
- 2019 – Got **1st** Award at Design and Idea Competition by IIC, Panjab University at Chandigarh.
- 2019 – **Mentor** of winning team at **Smart India Hackathon-2019** by **Kokuyo Camlin** at IIT Hyd.
- 2021-2022 – Three times winner of Best Employee per Quarter at **Flux Auto**.

Note: All the **Underline** text are Clickable Links.