

# ABHISHEK N

Email: [aabhi7090@gmail.com](mailto:aabhi7090@gmail.com) | Phone Number: 8088986585 | Bangalore

## CAREER OBJECTIVE

Embedded Systems Software Engineer with hands-on experience in C, C++, data structures, and microcontroller-based programming. Skilled in developing and debugging low-level linux device drivers, with a solid understanding of embedded system concepts. Eager to contribute to innovative embedded solutions by delivering reliable, optimized code and continuously growing with the organization's technological advancements.

## WORK EXPERIENCE

Embedded Trainee Engineer | XEEDO Technologies, Bengaluru

Apr 2024 – Till date

- Worked on GPIO and I2C drivers, including interrupt handling.
- Used procfs and sysfs for communication between user and kernel space.
- Created kernel modules to control LED and buzzer.

## TECHNICAL SKILLS

- Programming Languages:
  - Advanced C programming
  - OOP using C++
  - Data structures
- Embedded controllers:
  - Hands-on working with GPIOs, Analog I/Os, Memory usage, interfacing, character LCD
  - Peripherals usage - Timers, Counters and Interrupts
  - Communication protocols - UART, SPI, I2C etc
- Embedded platforms:
  - PIC (18F4580) board, Arduino Uno
  - Distributions - Linux (Fedora / Ubuntu) custom builds using Yocto(5.15),Buildroot
- Development environment and tools:
  - Development environment: Vim, Makefiles,
  - Compilers: GCC, XC8,
  - Debuggers: GDB
- System programming:
  - Linux Kernel system calls
  - IPC mechanisms – Pipe, FIFO, Shared memory
  - Network Programming using TCP and UDP sockets
  - pThreads – Multi thread programming
  - Linux device drivers

## EDUCATION

- B.Tech (ECE), DBIT Bangalore, VTU, 7.95 CGPA, 2019-2023

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## PROJECTS

### **TITLE : Smart - Lane - Discipline System : Enhancing Traffic Flow with RFID**

#### **PROJECT BRIEF :**

Developed an embedded RFID-based system to monitor and enforce lane discipline by detecting vehicle types and verifying correct lane usage in real time. Integrated LED and LCD indicators to alert drivers and authorities about lane violations, reducing congestion and enhancing traffic safety—contributing toward scalable smart city traffic solutions.

### **TITLE : NFC – Based Bike Engine and Key lock system**

#### **PROJECT BRIEF :**

Designed and implemented a secure bike ignition and locking system using NFC technology to replace traditional keys. Developed authentication logic on Arduino Uno with an NFC reader to enable engine start only for authorized users, improving vehicle security and preventing unauthorized access.

### **TITLE : Density - Prioritized RFID Traffic Control System**

#### **PROJECT BRIEF :**

Developed an intelligent traffic control system integrating RFID technology with vehicle density detection to dynamically optimize signal timing and prioritize emergency vehicles. Utilized existing FASTag infrastructure to enhance traffic flow efficiency, reduce congestion, and improve emergency response times in urban environments.

### **TITLE : Character Device Driver for LED Control**

#### **PROJECT BRIEF :**

Implemented a loadable Linux kernel module to control an LED via a character device interface. Developed essential file operations (open, read, write, release) for user-space interaction, created a device node under /dev using mknod, and validated functionality through kernel logs and dmesg outputs.

### **TITLE : I2C Driver (Simulated Environment)**

#### **PROJECT BRIEF :**

Developed a basic Linux I2C driver to enable communication between master and slave devices in a simulated setup. Implemented i2c\_client and i2c\_adapter structures for device registration and data exchange, and validated driver functionality using a dummy I2C bus.