

KARTIK PATHAK

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Experience

- **United Technologies** 07/18 - 11/19
Engineer
 - Developed firmware for HVAC zone controllers using embedded C/C++ for ARM based platforms(AM335x SoC)
 - Collaborated with cross-functional teams on firmware UI integration to support new product lines under development
 - Achieved successful project outcomes by maintaining accurate documentation and meeting strict deadlines
- **Indian Railways** 05/17 - 07/17
Intern
 - Studied the working of embedded safety systems used in TPWS
 - Gained exposure to the use of embedded control and signaling protocols within railway automation infrastructure

Projects

- **Next-Gen Zone Controller**
 - Developed embedded firmware and integrated UI components for Carrier's upcoming HVAC product portfolio.
 - Ensured modular, maintainable code architecture suitable for future scalability
- **BACnet protocol compliance upgrade**
 - Upgraded legacy firmware to align with the latest BACnet protocol revisions mandated by ASHRAE
 - Maintained backward compatibility for existing product lines, ensuring seamless protocol transitions
- **Wireless configuration access for HVAC controllers**
 - Engineered wireless connectivity features enabling remote configuration and diagnostics.
 - Improved ease of field deployment and minimized technician dependency on physical hardware access
- **Integrated controller simulation**
 - Built simulation setups for validating new controller features before deployment.
 - Supported rapid prototyping and reduced hardware dependency during early-stage development
- **I/O pack test utility**
 - Designed a utility application to test and validate GPIO pins and other hardware interfaces programmatically.
 - Eliminated the need for manual probing, significantly reducing debugging time.
- **Life based intervehicle communication**
 - Establish visible light based communication between vehicles to avoid accidents
 - Assessment of proximity of vehicles and intimidating thr vehicle control system to slow down in case of emergency
- **IOT based telemedicine system**
 - Designed vending machine whose stocks are monitored real time to restock sooner
 - Notification mechanism based on cloud data if the stocks decrease below threshold levels

Skills

- Programing Languages- Embedded C/C++, Assembly
- Communication Protocol - USRT, SPI, I2C, Modbus, BacNet
- Controllers- AM335X, STM32, ESP32, NRF52, Atmega328, 8051
- Tools- Keil, Cypress PSOC, STM32CubeMX, NordikSDK

- OS - Windows, Linux, RTOS

Education

- **IIIT Una** 2014-18
B.Tech, Electronics and Communication
7.9
- **Maharishi Vidya Mandir Chennai** 2013-14
High school
95.4