

Chaitanya's Projects

Academic Project

1. Digital Eye for Coach Guidance Automation:

This project presents the implementation of a system using RFID technology to accurately determine the order of coaches approaching a train station. Each coach is equipped with an RFID tag, which is read by an RFID reader at the station's outskirts. The RFID reader sends the detected data to the control room using an RF transmitter, eliminating the need for human intervention in data transmission.

The receiving module in the station processes the data and sends it to the station master's PC. The station master's PC then determines the platform for displaying the coach order using LCD displays. The entire system is implemented using an AT89S52 microcontroller and Keil micro vision software.

The system comprises a transmitter section with an RFID reader, RF transmitter, HT12E encoder, and other components. The RFID reader detects the RFID tags on each coach, and the data is sent through the RF transmitter to the control room. The RF transmitter uses the HT12E encoder to convert parallel data to serial data for transmission.

On the receiving end, an RF receiver captures the transmitted data, and an HT12D decoder converts it back to parallel form. The data is then sent to two AT89S52 microcontrollers, with one acting as the main controller and the other driving the LCD displays on the platforms. The station master can select the platform using switches, and the main controller commands the slave controller to display the coach order on the respective LCD displays.

The implementation involves using Keil software for code development, Flash Magic software for programming the microcontroller, and Proteus software for simulation. The entire system aims to automate the coach number display process, reducing manual errors and improving efficiency in railway operations. The project demonstrates the capability of RFID technology in providing a reliable and automated solution for coach identification and display.

I did this project at South Central Railway Station, Vijayawada, INDIA

Projects done at Organizations

2. Real Time Weather Monitoring System:

The main goal of this project is to collect and store various parameters like temperature, light intensity as data through different sensors and implemented a logger system which converts this data into meaningful format using 8051 development board.

The Components I used in this project are

- > Invector's 8051 Development board
- > RTC(DS1307),
- > EEPROM(AT24C08)
- > Temperature sensor (DS1621)
- > ADC(MCP3204)
- > LDR and LCD (16*2)

Interfacing Tasks I did

- > Interface RTC Using I2C protocol
- > Interface Temperature sensor using I2C protocol
- > Interface EEPROM using I2C protocol
- > Interface ADC (MCP3204) using SPI protocol
- > Interface LCD
- > Interface UART.

I did this project at VECTOR INDIA INSTITUTE BANGALORE, INDIA

3. Instrument Cluster Testing:

This project involves validation of instrument panel cluster connected in our hardware test bench against the functional specifications. Validation involves checking communication protocols like CANFD and LIN. Checking the functionality of DataFlash, Verifying Bootloader functionality of cluster and other features tested were HUD, Aging and Telltales.

Responsibilities:

- > Performing Manual Software validation of different vehicle functions of Instrument cluster and Head Up Display using Canoe

- > Development of test case Documents from the Requirements.
- > Ensuring 100 percent traceability between requirements and test cases.
- > Creating automation script for test cases using v-Test Studio.
- > Performing Automation and Manual execution of the test specifications.
- > Performing Impact Analysis for the changes.
- > Creating test objectives, tasks, test sessions in the PTC Integrity.
- > Reporting, Tracking, Retesting, closure of defects after bug fix.

4.

Now I started doing one project on ARM Cortex-M: Modular Embedded System Design:

The goal of this project is to check the condition of the ultrasonic sensor whether obstacle is Infront of the ultrasonic sensor able to cross a threshold or not. So, if obstacles exist then it would send the action to either turn or stop the robot (like blinking the LED in TM4C123 Microcontroller when Obstacle is there). If there is no obstacle it will go to the next sensor which is the infrared metal detector then it checks whether someone is touching the tail of the robot. If someone touched it could send a command to turn or stop the robot.

In this project I'm using

- > TM4C123 Microcontroller- (Tiva C Launch Pad)
- > HC-SRO4 – Ultrasonic sensor
- > TCRT500 – IR emitter/ detector pair
- > 6M12F DC motors with wheels
- > HK15178 (Hobbyking analog Servo)
- > Batteries

Doing.....

I think I clearly explain each project with details. So, please look at it and I'm also did a ROBOTICS certification course. I don't know which is helpful for this position or not, that's why I didn't mention it in my resume.

Thanks for your time.