

# SURENDRA KUMAR PARADESI

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## CAREER OBJECTIVE

Looking for a challenging and responsible opportunity and grow in the electronics industry by becoming an Embedded Systems Engineer. Learn new technologies and grow as a technical expert.

## TECHNICAL TRAINING

- Technical training program had completed – **Advanced Embedded Systems Course** at Emertxe Information Technologies (<http://www.emertxe.com>) Bangalore
- This course is Government of India certified program, aligned with **Skill India** / NSDC under Electronics Sector Skill Council of India (<http://www.essc-india.org>) - **Embedded Software Engineer QP ELE /Q1501**

## TECHNICAL SKILLS

- Programming Languages:
  - Shell scripting
  - Advanced C programming
  - OOP using C++
  - Data structures
- System programming:
  - Linux Kernel system calls
  - IPC mechanisms – Pipe, FIFO, Shared memory
  - Network Programming using TCP and UDP sockets
  - pThreads – Multi thread programming
- 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 ,CAN,etc
- Embedded platforms:
  - Distributions - Linux (Fedora / Ubuntu)
  - PIC (18F4580) board
- Development environment and tools:
  - Dev environment: Vim, Makefiles, MPLAB, Qt Creator
  - Compilers: GCC, XC8, ARM-Linux-gcc, Stm32cubeIde
  - Debuggers and simulation: GDB ,proteus

## COURSE WORK

- Microprocessor and Microcontroller
- Digital Electronics

## EDUCATION

- Embedded system course ,Emertxe information technologies ,2023-2024
- B.tech , Civil engineering, RGM CET, 6.5 CGPA, 2018-2022
- Class – XII, Board of intermediate education , 93.35%,2016- 2018
- Class – X, Board of Secondary education ,8.0 CGPA, 2015-2016

## PROJECTS

### Project Number:1

- **Title** : Image Steganography using LSB Encoding and Decoding.
- **Project brief** : The objective was to send a secret text file encoded inside an image of bmp file format. Encoded the length of the secret text and then encoded the data into the LSB of the image bytes. The decoding process involves decoding the length and then decoding the text bit by bit. The final output is the secret text after decoding.
- **Technologies used** : Embedded C – File operations, Pointers, Bitwise operations, Functions, Makefiles, Command line arguments .
- **Key challenges & Learnings** : Understanding of pixels and header of image file by doing literature study Transforming the embedded information to the destination without changing properties of original image Faced challenges while doing bitwise manipulation of data to embed as well to retrieve the data from the destination image which was solved by self-understanding.

### Project number: 2

- **Title:** Address Book
- **Project brief:** Developed a console-based Address Book application allowing users to add, search, edit, and delete contacts. Enhanced proficiency in core C programming concepts.
- **Technologies used:** Advanced C – Function pointers, Dynamic memory allocation, File input/output handling
- **Key challenges & Learnings:** Function pointer declaration and assigning right address was a challenge, faced multiple segmentation faults using the same. Files are open and close was challenging and how to save the file with content .Library files such as fopen, fclose, fseek, fread, fwrite and system library files are to be learned .

### Project number:3

- **Title:** Car black box
- **Project brief:** Designed an event data recorder for automobiles to monitor and record electronically sensed events.Enabled proactive maintenance by detecting engine faults and monitoring fleet activities.
- **Technologies used:** Pic microcontroller & schematics ,Peripheral(understanding the data sheets), Interrupt handling.
- **Key challenges & Learnings** : During the project I faced difficult situations and challenges to come back to the project explanation .I asked the mentors about the project .Every circumstance I was understood and daily asked about projects and noted every point .Detailed i can't understand the project daily doing a practice and facing the challenges in this project .

## Project number:4

- **Title:** Minishell
- **Project brief:** Mini shell is a command processor, typically run in a text window, allowing the user to type commands which cause actions. Every Operating System provides this Command Line Interface (CLI) which takes commands from the user and provides required output. BASH can also read commands from a file, called a script. Like all Unix shells, it supports piping and variables as well.
- **Technologies used:** Linux kernel system call usage , IPC-Signal handlings, Strings pointers and parsing
- **Key challenges & Learnings :** During the project I was faced with difficult situations and challenges to come back to the project explanation .I asked the mentors about the project .Doing daily practice and asking the mentors and friends . During the project every line I understood and went to the next process.

## EXPERIENCE :

Project Title: **Access Control System for Secured Entry Points**

Experience Duration: *1 Year (From March 2024 – Present)*

Role: **Embedded Software Engineer and Technical Support Engineer**

Project Description:

- Worked on the development and implementation of a comprehensive **Access Control System** designed to manage and secure physical entry points such as doors, boom barriers, and turnstiles within high-security environments (e.g., ODC – Offshore Development Centers).
- The system was based on **TCP/IP protocol communication for data transmission between microcontrollers and server-client architecture**. I was responsible for integrating hardware components such as **in-readers, out-readers, electromagnetic locks (EM Locks)**, and networked control boards to ensure secure and authorized access.

Key responsibilities and contributions:

- Developed and deployed embedded firmware for microcontrollers to handle real-time access requests and control signals.
- Implemented TCP communication protocols for reliable bi-directional data flow between embedded devices and centralized access servers.
- Configured authentication logic to validate user credentials via RFID/biometric readers.
- Controlled actuation of EM locks and physical access barriers based on authorization response from the server.
- Ensured proper feedback and error handling through status codes and logging mechanisms for access events.

## DECLARATION :

- Driven and adaptable, I am excited to kickstart my career, applying my education and skills to contribute energetically in a challenging and growth-oriented professional landscape.