

## Munganty Rahul

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### EDUCATION

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#### JNTUH

*Master's in Embedded Systems.*

Hyderabad,  
2020 – 2022

#### GITAM UNIVERSITY HYDERABAD

*Bachelor's in ECE.*

Hyderabad,  
2015 – 2019

### EXPERIENCE

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#### STUAM TECHNOLOGIES

*-Embedded Firmware Developer*

Oct 2022 – Present  
Hyderabad.

- Developed a SPI Flash driver to program binaries into SPI Flash memory using an STM32 microcontroller.
- Designed and implemented a Boot loader for STM32-based embedded systems.
- Developed I2C and SPI bit-banging drivers using the C8051F380 microcontroller.
- Performed board bring-up for the T2081 processor, NOR booting via FPGA, DTS and kernel bringing up UART via FPGA.
- Developed device drivers for temperature sensors, I2C multiplexers, I/O expanders, and SGMII Ethernet interfaces using SERDES lines for the T2081 processor.
- Designed a driver for the Si5341/40 clock generator, generating multiple frequency outputs using a single reference clock on the C8051F380 controller.
- Developed a frequency synthesizer system generating 12–18 GHz frequencies using the LMX2694 and Digital Step Attenuator (DSA), integrated with baseband boards over SPI communication.

### PROJECTS

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#### Project 1

Title: **POWER PC SINGLE BOARD COMPUTER.**

Team Size: 2

Role: Firmware Developer.

Descriptions:

NXP (Free scale) VME Single Board Computers (SBCs), carrier cards for embedded computing applications. With both conduction-and air –cooled boards available, these products can be applied to a wide variety of embedded application across military, communication, and commercial/industrial markets.

Roles and Responsibilities:

- Developed and debugged BSP for the T2081 processor using the Yocto Project on Linux environment.
- Implemented SD & NOR booting via FPGA for the T2081 processor.
- Bring up UART, Temperature Sensor, I2C Mux, and I/O Expander using i2C for T2081 Processor.
- Integrated and validated SGMII Ethernet functionality using a Marvell PHY chip.

## Project 2

Title: **GLOBAL SYSTEM FOR MOBILE COMMUNICATION.**

Team Size: 1

Role: Firmware Developer.

Descriptions:

GSM Recorder RF module consists of two channels with independent input and output ports

Channel 1 frequency range 1710 – 2700 MHz with independent bands 1710 – 2170MHz, 2300-2400MHz&2500 -2700MHz can be individually selected based on requirement.

Channel 2 frequency ranges 824 – 5000 MHz with independent bands (1710 – 2170MHz, 2300-2400MHz& 2500 -2700MHz) can be individually selected.

Roles and Responsibilities:

- Integrating UI via SPI using STM32.
- Managing GPIO'S and DSA using STM32.
- Bring up LMX2674 Synthesizer using STM32.

## Project 3

Title: **DIGITAL MOBILE RADIO.**

Team Size: 8

Role: Firmware Developer.

Descriptions:

Digital Mobile Radio (DMR), Model LCR of ICS, open Digital Mobile Radio standard defined in the European Telecommunications Standards Institute (ETSI) Standard TS 102 361 parts 1–4 and used in public safety and commercial solutions around the world. DMR, uses proprietary AMBE+2 vocoder and two-slot TDMA in a 12.5 kHz channel. It offers both voice and data communications and interfacing to external networks. Voice communications offer features as call alert, emergency call, remote monitoring, silent worker, Push-to-Talk ID, radio check, all call, stunning etc. It also offers Greater call capacity, more reliability, Security features, Better call quality, Privacy features, longer battery life, increased spectrum efficiency. DMR are offered in VHF-Very High Frequency and UHF-Ultra High Frequency bands meet MIL-STD-810F/G specifications.

Roles and Responsibilities:

- Drivers Developed-SPI Flash, Keypad (Alpha Numeric & Numeric) using STM32.
- Password Authentication using STM32.
- Boot loader using STM32.

## TECHNICAL SKILLS

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- **Programming Languages:** Embedded C, C, and RTOS.
- **Microcontrollers & Processors:** STM32, C8051F380, NXP T2081 (PowerPC).
- **Communication Protocols:** SPI, I2C, UART, SERDES.
- **Firmware & Device Drivers:** Boot loader Development, Board Bring-Up, BSP, Bare Metal Programming.
- **Tools & IDEs:** STM32 Cube IDE, STM32 Cube MX, STM32 Cube Programmer, Simplicity Studio, CodeWarrior Tap (NXP T2081), VS Code, Clock Builder Pro.
- **Debugging & Testing Tools:** SWD, Oscilloscope, Logic Analyzer.