Akhila Reddy

EMBEDDED SOFTWARE DEVELOPER

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Skills

Programming Languages

Embedded C

Controllers & FPGAs

- Zynq Ultrascale+ MPSoC
- STM 32 (STM32H7VBi)
- ATMEL (SAMD21)
- NXP(MK66FN2M0VMD18)

Software Development Tools

- Xilinx SDK
- Atmel AVR
- MP Lab IDE
- Keil uVision
- Petalinux

Interfaces, Protocols and Peripherals

- Ethernet, USB, PCI Express
- SPI, I2C, UART, QSPI, DDR
- Axi DMA, Axi FIFO
- Flash, LCD
- GPS, GSM,WiFi, RFID,Radio
- ADC, DAC
- 1553, ARINC-429
- LoRa, MQTT, openAMP

Version Control

- SVN
- GIT

Version Control

- Xilinx ILA Chipscope
- Signal Generators
- Power Supply
- Oscilloscope

Certifications

Advanced Course in Embedded Systems
Vector India

Work Experience

Sigma Microsystems Pvt Ltd — *Hyderabad, India*

EMBEDDED SOFTWARE DEVELOPER — *Jun'18- PRESENT*

SUMMARY

- *Embedded Software Engineer with more than 3 years of experience in designing, developing firmware and testing, hardware and software for the embedded systems using industry standard development tools and test equipment.*
- *Executed projects from the scratch on varied scales with hands on experience on working with a wide variety of SoC FPGAs, microcontrollers, microprocessors, while writing the complete firmware and optimizing at various levels*

WORK HISTORY

- *Embedded Software Design, firmware development, testing of microcontrollers using C language*
- *Development of low level device driver development in Linux user space and baremetal*
- *Board bring up & testing overall functionality of system and understanding hardware schematics*
- *Experienced on working on LoRa, TCP/IP, PCIe, USB, I2C, SPI, QSPI, UART, DMA, QSPI protocols*
- *Experienced in working on multicore processing in Zynq Ultrascale+ using shared memory & IPCC*
- *Experienced in Booting and developing applications in Petalinux for Xilinx softcore processors*

PROJECTS

Data Acquisition System — *Sigma Microsystems*

Role: Firmware Developer

- Developed firmware for 'Data Acquisition System' where ADC Data is captured and is transmitted to the host system through PCI Express/Ethernet. System is used to detect targets for missiles
- System is developed using FPGA - Zynq Ultra-scale + MPSoC. The data captured is processed via ADC, and is transferred to DRAM through AXI DMA, AXI FIFO and is displayed through Serial Ports/Serial Console. The said data is sent to the host along with Timestamp and location, captured via GPS
- Generated required waveforms (pulse, sine, ramp) using Digital-to-Analog Convertor (DAC)
- The system is developed using Xilinx Vivado and SDK tools

Asset Tracking System — *Sigma Microsystems*

Role: Firmware Developer

- Developed firmware for the system to track the vehicles and monitor their speeds in Airports, monitor drivers and prevent/restrict access of said vehicles to secure areas
- The tracking system is equipped with GPS, Micro-controller, LCD Screen, Battery, and Radio (LoRa Protocol), Wifi (TCP/IP Protocol), GSM (MQTT Protocol) for transmitting GPS Data (position, speed of vehicle), Battery information to the receiver in the monitoring room.
- System has been equipped with an RFID sensor which is used for driver authentication
- Tracking system data from vehicles is transmitted via LoRa Protocol to the receiver, which is then transferred to Host PC, for visually displaying the received information

PROJECTS

Megh Suchak/ Cloud Lidar System *Sigma Microsystems*

Role: Firmware Developer

- Detection of Clouds, including estimating the height and density, for evaluating the possibility of landing a flight at the respective airports/ships on real time basis
- Zynq Ultra Scale+ MPSoC is used as the System on Chip (SoC) for processing and controlling the entire board
- Laser signals are sent using Laser system attached to sensor board and are sent up to pre-determined distance of 10 kilometres, and echo of these laser signals is being received by Avalanche Photo Diode (APD).
- Amplifier board, amplifies the signal being received by APD and the amplified signal is being sent to Analog-to-Digital Converter (ADC) via SMA Cable, which converts the analog data to digital data. Post which Digital data is stored in a FIFO, and is transferred to DDR. Captured data from DDR is plotted on PC for analysing the cloud estimation data.
- Distance, thickness and density of the cloud is calculated using the plotted data on GUI

Ambience Controller *Sigma Microsystems*

Role: Firmware Developer

- Developed a sensor system to detect internal temperature of the Megh Suchak system and accordingly basis the detected temperature, developed software to switch on the respective heating unit/cooling unit to maintain the appropriate temperature of the system
- Developed a sensor system for the Megh Suchak system to detect rain and display the status. Additionally, developed software to switch on the blower to clean the dust on the system

Corporate and Academic Projects

Vector India *Hyderabad, India (Feb'18- Mar'18)*

IMPLEMENTATION OF FRONT END SERIAL ISP APPLICATION FOR AT89S52

Developed front end Serial ISP application through Linux which is used in dumping the file to hardware

TKR College of Engineering & Technology *Hyderabad, India (Feb'18- Mar'18)*

ROBOTIC AUTOMATED EXTERNAL DEFIBRILLATOR FOR EMERGENCY MEDICAL SERVICES IN SMART CITIES

To provide immediate treatment to people in emergency who experience sudden cardiac arrest and die due to lack of emergency treatment. An AMBUBOT is designed which carries an AED whose functionality saves lives in smart cities.

Education

TKR College of Engineering and Technology *Hyderabad, India*

*BACHELOR OF TECHNOLOGY, **ELECTRONICS & COMMUNICATION ENGINEERING**, GPA: 76.7%*

Sri Chaitanya Junior College *Hyderabad, India*

BOARD OF INTERMEDIATE EDUCATION, MPC(MATHS-PHYSICS-CHEMISTRY), GPA: 91.3%

SURYA CONCEPT SCHOOL *Nagarkurnool, India*

BOARD OF SECONDARY EDUCATION, GENERAL, GPA: 89.0%