

**SHIVA PRASAD KANNOJU**

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**Phone No:** +91 9848419504.

**Professional Summary :**

As an experienced Embedded Firmware Engineer, I bring expertise in firmware development and communication protocols. I'm seeking a challenging role to apply my analytical skills and deliver impactful solutions for innovative projects.

**Work Experience:**

**Since 19th July 2021: VEM Technologies Pvt. Ltd., Hyderabad as Embedded firmware engineer(R&D).**

- I had been working on developing application software using TMS320F28069, TMS320F28377D series Microcontroller and Micro Blaze softcore processor(FPGA) .
- I had completed CAS(Controlled Actuation System), TELEMTRY and currently working on Autopilot and Guidance Software of ATGM(Anti Tank Guided Missile) project.

**Profile Summary:**

- Hands on experience with design and developing of firmware for Micro Blaze processor.
- Experience in application programming for TMS320F28377D,TMS320F28069 Microcontrollers.
- Implemented SCI Flash boot loading on TMS320F28069 controller.
- Experience in interfacing external devices like Video encoder and video decoders, ADC, DAC,DDR3 memory and RF Trans-receiver(AD9361).
- Hands on experience with serial communication protocols UART, SPI, I2C ,1553 and knowledge on CAN protocol and AXI bus.
- Experience in Peripheral modules ADC, DAC, PWM, TIMER, ECAP etc.
- Experience in Motor Controlling Applications (DC& BLDC Motors).
- Experience in Multi-Core Communication.
- Extensive knowledge on software level debugging and system level debugging.
- Exposure to Oscilloscope ,Function Generator and Schematic Design, Spectrum analyser, Signal generator.
- Experience on software documentation using MIL-498 , DO-178 standards and SDLC.

**Skillset :**

**Operating Systems :** Microsoft Windows, Linux(Virtual Machine ).

**Development Tools:** Xilinx tools Vivado , SDK, Vitis for Micro-blaze firmware development , Code Composer Studio (CCS) IDE for TMS320F28377D,TMS320F28069 Microcontrollers, STM32 Cube IDE and Keil IDE for STM32F401RBTx Microcontroller.

**Languages:** Expertise in C, Embedded C , Good Knowledge on C++, Data structures, Linux .

**Embedded System :** Proficient in understanding Real-Time Operating Systems (RTOS) with a focus on FreeRTOS using STM32 development board.

**Development Boards :** Kintex(KC705), Zynq (zedboard), Arty board bring ups

**Soft Skills:** Strong analytical and problem solving skills, excellent documentation and presentation skills.

### **Project Profile :**

#### **Project 1: Autopilot and Guidance Software.**

**Description:** The Autopilot and Guidance is a part of ATGM(Anti-Tank Guided Missile) which is used to hit a target at a range up to 2500 meters. It generates the Fin deflection Command's for CAS(Control Actuation System) . Control Actuation System is a module consist of 4 Actuators design to Drive the Actuators for missile deflection. This module contains Accelerometer, Gyro sensors, RS422,Timer etc.,

**Tools:** Xilinx Vivado, SDK, Vitis.

**Platform:** Embedded C, Micro-Blaze processor

#### **Roles &Responsibilities:**

- Initialization of on-chip and off chip peripherals.
- Establishment of communication between different Sub-modules CAS(Control Actuation System), Telemetry, IMU(Inertial Measurement System) using UART.
- Module programming on Multicore communication.

#### **Project 2: Controlled Actuation System(CAS).**

**Description:** The control actuator system functions as a quad-channel digital servo control, designed as a position servo system. In this setup, an electrical encoder serves as a position sensor, driving 3-phase BLDC motors. The primary goal of this system is to govern and orient the fins of the missile to achieve specific directional movements. Commands from the Guidance electronics are received through UART, guiding the system to operate accordingly

**Tools:** Code Composer Studio

**Platform:** TMS320F28377D, Code Composer Studio & Embedded C

#### **Roles &Responsibilities:**

- Initialization and configuration of microcontroller peripherals Timer, UART, SPI, ADC, DAC, ECAP, EPWM etc.
- electrical absolute encoder acts as a position sensor to drive 3 phase BLDC motors
- Implementing the control loop code for controlling the 4 motors with hall commutation.
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#### **Project 3: TELEMETRY**

**Description : :** The Telemetry is a part of ATGM(Anti-Tank Guided Missile) which is used to collect the missile data while missile travelling. It has Two stations One is Transmitter and other is Receiver station. Transmitter in Missile which transmits all missile related data like body rates trajectory etc.,

are modulated using QPSK modulation and transmits through RF transceiver to Receiver station. Receiver at ground station. Collected data stored at user for further testing reference.

**Tools:** Xilinx Vivado, SDK, Vitis .

**Platform:** Embedded C, MicroBlaze processor

**Roles &Responsibilities:**

- Initialization of on-chip and off chip peripherals.
- Configuration of External peripherals ADC, DAC, Video encode and Decoder and RF transceiver(AD9361).
- Application development for telemetry as transmitter and receiver.

**Qualification:**

- Pursued PG diploma in C, Embedded systems design at Kernal Masters Institute, Hyderabad.
- Pursued B.Tech in Electronics and Communication stream from JNTU University with 66%.

**Declaration:**

I hereby declare that all the above information is true to my knowledge and I bear the full responsibility.

**Place:** Hyderabad

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