KESHAV JHA

Embedded Systems Engineer

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EDUCATION

B.Tech. in Computer Science and Engineering, Birla Institute of Technology, Mesra. 2022 - 2026

SKILLS

Languages: C, C++, x86 Assembly, Verilog
Platforms: ARM(STM32 Microcontrollers), FPGA(Tang Nano 9k based on GoWin)
UEFI modding, VBIOS modding for AMD systems using AMIBCP and Insyde tools
Schematic capture and design using KiCad

PROJECTS

UEFI/BIOS and VBIOS Mod for Dell G5SE 5505 systems

- Modified the Video BIOS of the RX 5600M GPU, tuned VRAM timings, frequency curve, and powerplay table to achieve higher, stable clock speeds.
- Modified system UEFI to unlock undervolting, S3 states, memory overclock, and other advanced user options on the laptop.
- VRAM clock increased from 1500MHz to 1750MHz, Core clock boosted from 1300 MHz to 1800 MHz, stable operation ensured at just 100 Watts TGP.

Micromouse Bot based on STM32 MCU

- Built an autonomous bot using STM32 MCU, gyroscope (MPU6050), IR sensors (940nm), ultrasound sensors, and encoded hall-effect motors.
- Dealt with communication protocols such as SPI, I2C, and UART, and implemented timers, ADCs for infrared, PWM for motors, interrupt handling.
- Integrated high-level flood filling logic with low-level functionalities for autonomous navigation.

PicoRV32 SoC Implementation using Tang Nano 9k FPGA

- Built an SoC based on the PicoRV32 RISC-V core using Tang nano 9k FPGA, focusing on simplicity in the initial implementation.
- Aimed to achieve more abstraction as the design matures, and used DSP blocks to reduce overall utilization.
- Integrated onboard PSRAM for improved performance.

Lightweight Convolutional Neural Network on Tang Primer 25k FPGA (Future Project)

- Planning to implement a lightweight convolutional neural network using the Tang Primer 25k FPGA for efficient inference and reduced resource utilization.

EXTRACURRICULAR ACTIVITIES

- Silver medals in BIT Athletics meet's 1500M and 800M run.
- Profound interest in long run and endurance training.
- Founder member of Ashok Nagar Calisthenics Society, keen interest in bodyweight exercises and pushing others toward advanced calisthenics exercises such as pull-ups, muscle-ups, and pistol squats.
- Promoting the idea that fitness can be achieved without a gym subscription.