KESHAV JHA

Embedded Systems Engineer — Systems Programmer

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EDUCATION

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

SKILLS

Languages:	C, C++, Python, HTML/CSS, Verilog
Platforms:	ARM (STM32), FPGA (Tang Nano 9k), Linux (Fedora/Arch)
Tools:	UEFI/BIOS Modding, AMIBCP, Insyde BIOS Tools, Git, KiCad, GDB, QEMU
Other:	Embedded Linux, OS-level Debugging, Shell Scripting, System Calls

PROJECTS

UEFI/BIOS and VBIOS Mod for Dell G5SE 5505 Systems

- Modified RX 5600M VBIOS: tuned VRAM timings, powerplay table, and frequency curves.
- Unlocked advanced UEFI options like S3 sleep, undervolting, memory tuning using AMIBCP and Insyde tools.
- Achieved stable 1800 MHz core and 1750 MHz VRAM clocks at 100W TGP.

Micromouse Bot using STM32

- Built autonomous robot with STM32, gyroscope (MPU6050), IR, ultrasonic sensors, and hall-effect encoded motors.
- Used SPI, I2C, UART, timers, ADCs, PWM, and interrupts for real-time control.
- Implemented flood-fill algorithm for maze-solving.

FPGA-Based Audio Streamer with UDA1334A DAC

- Designed a Verilog-based I2S audio engine for 24-bit, 96kHz stereo playback via UDA1334A DAC.
- Integrated SPI Flash (P25Q32SH) to store pre-encoded audio data; implemented state machine to read via APB.
- Synchronized BCK/LRCK/SDATA generation from 27 MHz base clock using PLLs and counters.
- Developed debug logic with LED indicators, and modular architecture with FSM-based buffer control.

Linux-Native Car Simulator with OS-Level Components

- Developed a C++ simulation of a car ECU system with multiple sensor modules on Linux.
- Used D-Bus, IPC (pipes/shared memory), and signal handling to model diagnostics and communication.
- Integrated OS-level features like custom scheduling and low-level debugging with GDB.

DPS Khunti School Website (Frontend + Hosting)

- Designed and deployed a clean, responsive website for DPS Khunti using HTML, CSS, and JavaScript.
- Added embedded sections for PDF uploads, announcements, and admission form submissions.
- Hosted the site using GitHub Pages with custom styling and lightweight performance-first design.

Lightweight CNN on Tang Primer 25k FPGA (Planned)

- Planned deployment of fixed-point quantized CNN for real-time inference using minimal DSP and BRAM.
- Focused on low-latency, low-power edge computation on constrained hardware.

EXTRACURRICULAR ACTIVITIES

- Silver medalist in BIT Athletics Meet (1500m and 800m races).
- Founder of Ashok Nagar Calisthenics Society – promoted advanced bodyweight training like muscle-ups and pistol squats.
- Advocate of sustainable, gym-free fitness through outdoor endurance and strength-based training.