Harshith Kantamneni

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Madison, Wisconsin - 53726, USA

Education

University of Wisconsin-Madison — *Madison, USA*
Master of Science in Electrical and Computer Engineering — September 2024 - December 2025
Relevant Coursework: Advanced Computer Architecture 2, High Performance Computing for Applications in Engineering, Machine Learning, Computer Architecture, Digital System Design and Synthesis

Vellore Institute of Technology — *Amaravati, India*
Bachelor of Technology in Electronics and Communication Engineering — November 2020 - May 2024

Projects

5-Stage Pipelined Processor — August 2024 - December 2024
Tools: Verilog, ModelSim

- Designed and implemented a 5-stage pipelined processor adhering to the WISC-F24 ISA.
- Developed the ALU, enabling 8 arithmetic and logical operations.
- Engineered Branch Hazard Detection Unit, reducing stall penalty by 30%.
- Integrated advanced forwarding mechanisms (EX-EX and MEM-EX), reducing stalls by 40%.

Knights Tour FPGA Implementation — August 2024 - December 2024
Tools: SystemVerilog, ModelSim, Synopsis, Quartus

- Designed and implemented a digital system for solving the "Knight's Tour" problem on an FPGA, achieving 333 MHz clock frequency.
- Synthesized the design, achieving a 10% reduction in logic cell usage.
- Developed and verified SPI and UART protocols for sensor integration.

Home Monitoring System — August 2024 - December 2024
Tools: C, Altium Designer

- Developed a home monitoring system using PSoC 6 for real-time data acquisition.
- Created custom drivers for SCD-41 (CO2 sensor) and MQ-7 (CO sensor) over I2C.
- Designed and assembled a custom PCB for sensor integration.

IoT-Enabled Drone Agricultural Automation System — August 2022 - July 2023
Tools: Raspberry Pi, Arduino

- Developed a drone-based farming solution for precision agriculture.
- Implemented automated seeding, fertilizer spraying, and crop disease detection, improving efficiency by 40%.

Experience

Society for Space Education, Research and Development — *Bengaluru, India*
Research Intern — November 2021 - January 2022

- Built firmware for a balloon satellite using ESP32, enabling real-time data collection.
- Developed a robust startup sequence, reducing initialization time by 30%.
- Implemented a multi-sensor data aggregation framework for temperature, pressure, humidity, and GPS.

Skills

- **Hardware Description Languages:** SystemVerilog, Verilog
- **Programming Languages:** Embedded C, C++, Python, Java, Assembly
- **Tools:** Synopsis, ModelSim, Quartus, Altium Designer, MATLAB, Simulink, Git
- **Technical Skills:** Computer Architecture, Embedded Systems, Machine Learning, Robotics, Wireless Protocols (WiFi/Bluetooth), Automotive Protocols (UDS, CAN, CAN FD, LIN), PCB Design, CUDA, OpenMP, gem5, FPGA design, RTL design

Activities & Achievements

- **Head of Communication Subsystem Team** - Students for Space Exploration and Development (2022-2023)
- **3rd Prize** - KRITAGYA National Level Hackathon 3.0 (2022-23)