Yash Mishra

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Education

Purdue University — West Lafayette, Indiana
Bachelor of Science in Computer Engineering — *August 2023 – May 2026*

- **GPA:** 3.64, Dean's List, Semester Honors
- **Relevant Courses:** Microcontroller Systems, ASIC Design, UVM Verification, Digital System Design, Electrical Engineering Senior Design Projects, Compilers and Translator Writing Systems

Purdue University — West Lafayette, Indiana
Master of Science in Computer Engineering — *August 2026 – May 2027*

Experience

SoCET — August 2024 – April 2025
UVM Verification — *West Lafayette, Indiana*

- Designed and implemented **UVM testbenches** for AHB-MUX, covering drivers, monitors, sequences, predictors, and scoreboard, reducing functional bugs by **30–40%** pre-synthesis.
- Developed **TLM interfaces and coverage-driven verification strategies**, improving verification efficiency and reducing regression runtime by **25%**.

Dynoco, Purdue Grand Prix — January 2023 – Present
Research and Development Lead — *West Lafayette, Indiana*

- Integrated advanced go-kart sensors for real-time telemetry, i**mproving lap times by 15–20%** and vehicle stability.
- Engineered a custom wheel and axle system, enhancing load distribution and cornering precision, resulting in **10% increase in cornering efficiency**.

Teaching Assistant, Purdue University — August 2025 – Present
ENGR 133 and ECE 20007 — *West Lafayette, Indiana*

- Guiding 120+ students in Python, MATLAB, Excel, and circuit analysis, and helping them increase their lab completion and course performance.
- Organized review sessions and developed supplemental materials bridging theory and hardware applications.

Projects

Intelligent Bike Safety System (Project Lead) | *ESP32/NRF52, Embedded Systems, LiDAR* — August 2025 – Present

* Leading development of an **integrated safety platform** with car detection, crash detection, and rider communication.
* Implementing **LiDAR/Radar-based detection and haptic feedback**, and **crash algorithms** on ESP32 with IMU and GPS data.
* Building a mobile app with BLE for **ride metrics, emergency alerts, and contact notifications**.

USB Data Communication System | *SystemVerilog, Quartus, ModelSim* — March 2025 – May 2025

* Implemented USB TX and Data Buffer modules for USB 1.1 packet transmission using NRZI encoding, FIFO buffering, and reset handling, achieving 100% protocol compliance in simulations.
* Built testbenches and waveform scripts, verifying all RX and AHB subordinate interfaces, **ensuring 0% functional discrepancies in 50+ test scenarios**.

32x32 RGB Matrix Memory Game | *STM32F0, C, Embedded Systems* — January 2025 – May 2025

* Programmed rendering routines and GPIO multiplexing logic to control a 32×32 RGB matrix with real-time updates at 10+ FPS.
* Integrated joystick inputs and SPI OLED display for level-based gameplay with 3 difficulty levels and scoring system.
* Developed directional input system with external interrupt debouncing, **reducing input errors by 25%**.

AI-Powered Inventory and Food Planner | *Python, OCR, Generative AI* — December 2024 – Present

* Developed a pipeline using OCR (pytesseract) + Gemini-1.5 AI, **classifying 100+ receipt items per minute** and updating inventory automatically.
* Enabled real-time ingredient recognition and categorization using AI and OCR, **reducing manual inventory tracking and meal planning effort by automating over 100 items per minute**.

Technical Skills

Languages: Python, C, C++, SystemVerilog, Verilog, MATLAB
Tools/Frameworks: STM32, ModelSim, Vivado, Quartus, PlatformIO, PyTorch, TensorFlow, Keras, IBM Cloud, Git, Linux
Skills: Digital Logic Design, Embedded Systems, UVM, Signal Processing, SoC Design, OCR, Testbench Development
Libraries: Pandas, NumPy, Matplotlib, Tkinter, Tesseract, OpenCV, Scikit-learn, PyTorch Lightning