

# Surya Pratap Sarangi

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## CAREER OBJECTIVE

Highly motivated aspiring **Trainee Engineer** seeking a role at **Quest Global** to leverage expertise in Hardware-Software Integration, System Design, and Real-Time Computing. Proficient in Embedded C, Verilog, and Python, with a proven track record in optimized MAC unit design and edge deployment of ML models. Eager to contribute to challenging projects and drive innovative, system-level solutions in a global engineering environment.

## EDUCATION

- 2022 – 2026 B.Tech in Electronics & Communication Engineering (VLSI Specialization)**  
Centurion University of Technology and Management, Odisha
- 2020 – 2022 Higher Secondary (Science Stream)**  
Prana Nath Autonomous College, Khurda
- 2008 – 2020 School Education (10th)**  
Saraswati Shishu Vidya Mandir, Jatani

## TECHNICAL SKILLS

Programming	C, C++, Embedded C, Python, Verilog, SystemVerilog
Embedded & RTOS	Arduino IDE, Raspbian OS, Linux Shell Commands, Sensor Interfacing, UART/SPI/I2C, RTOS
Design & EDA	RTL Design, FPGA Prototyping, Synthesis, Timing Analysis, Cadence, Xilinx ISE, Vivado
Libraries & ML	OpenCV, NumPy, scikit-learn, MobileNet (COCO Dataset)

## CERTIFICATIONS & ONGOING LEARNING

- Completed NPTEL course on **VLSI Design Flow: RTL to GDS**.
- Currently studying **Mixed-Signal Design and Power Conversion Topologies**.

## PROJECTS

### Approximate MAC Unit for Edge Detection

🔧 Verilog, Python | Cadence, Xilinx ISE

- Designed and implemented a Vedic multiplier and accumulator architecture to optimize edge detection pipelines.
- Applied approximate computing to reduce hardware complexity and power overhead while maintaining high-speed performance.
- Validated design on Xilinx ISE with simulation and timing analysis for real-time image processing.

### Raspberry Pi-Based Real-Time Object Detection Using Pi-Cam

📷 Python | Raspberry Pi, Pi-Cam

- Trained a MobileNet model on the COCO dataset, achieving 89% detection accuracy.
- Deployed optimized inference pipeline on Raspberry Pi for real-time object tracking and analysis.
- Demonstrated expertise in edge deployment and balancing accuracy versus latency.

### Analog Signal Acquisition System Using Arduino

🔧 Embedded C | Arduino Uno, LM35, LM358

- Developed a system for acquiring and processing analog signals from sensors.
- Implemented signal conditioning with op-amps and passive filters for ADC conversion.
- Processed data using Embedded C for real-time monitoring, demonstrating mixed-signal design and hardware-software integration.

## EXPERIENCE

### Machine Learning Intern — Unified Mentor (Remote)

May 2025 – Nov 2025

- Successfully executed six ML projects focusing on model training, preprocessing, and algorithm development.
- Applied Python and ML libraries to real-world datasets, showing initiative and technical adaptability.

### Part-Time Tutor — Self-employed, Jatani, Odisha

Sep 2023 – Present