

# NISHITH SHAILESH HINGOO

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## Education

### Rochester Institute of Technology

Master of Science in Computer Science

Expected May 2026

Rochester, NY

### BMS College Of Engineering

Bachelor of Science in Electronics And Communication

August 2019 – May 2023

Bangalore, Karnataka

Relevant Coursework: Data Structures, Computer Vision, Deep Learning, Natural Language Processing

## Experience

### Qualcomm

Software Engineering Intern - Embedded and Automotive team

February 2023 – July 2023

Bangalore, Karnataka

### PMU Event Profiling Optimization on QNX | C, embedded C

- Addressed hardware limitations by enabling profiling of more than 6 PMU events within a single time period using CPU-PMU registers on QNX 7.1.0 OS.
- Optimized profiling efficiency by implementing time multiplexing, evenly distributing time across event sets, and reducing profiling time by 50%.

### Cross-Platform Profiler Report Automation Tool | Python, Plotly, Pandas

- Established the development of a cross-platform tool for Windows and Linux to automate reporting and result parsing, streamlining workflows for over 10 sister teams.
- Validated correlation of test application trends with individual CPU events, achieving a 95% accuracy rate.
- Developed an interactive tool for generating profiler data reports from the automotive application using Plotly, reducing analysis time by 60% and enabling web embedding for more than 10 teams.
- Enabled easy comparison of profiler results through interactive plots, with the capability to embed them in websites.

## Projects

### Real-Time Tactical Football Analysis with AI | Python, OpenCV, YOLOv8

September 2025

- Built a computer vision-based football analytics system using YOLOv8 to detect and track players, referees, and footballs in real time with over 90% detection accuracy.
- Trained a custom YOLO model and applied KMeans clustering, achieving 95% correct team classification based on jersey color segmentation.
- Implemented optical flow and perspective transformation to correct camera motion, measuring player movement in meters and computing speed and distance within ±5% of ground-truth estimates.

### Airflow Feature Extraction From Car Data | Python, PyTorch, PINNs, Autoencoders

April 2025

- Developed Physics-Informed Neural Networks (PINNs) in PyTorch to model 3D aerodynamic velocity fields, embedding Navier–Stokes constraints for physics-consistent flow prediction.
- Utilized the DrivAerNet++ dataset and designed an autoencoder–KMeans pipeline, identifying distinct aerodynamic regions such as wake, stagnation, and freestream zones with 92% clustering accuracy.
- Optimized preprocessing by reducing CFD input dimensionality by 80%, accelerating clustering and enabling interpretable, real-time aerodynamic analysis.

## Technical Skills

**Programming Languages:** Python, Java, C, C++, C#, JavaScript, HTML/CSS

**Frameworks & Libraries:** NumPy, Pandas, OpenCV, Plotly, Matplotlib, PyTorch, YOLOv8, Seaborn, scikit-learn

**Software & Tools:** Git, Jupyter Notebook, Google Colab, Unity, Arduino IDE, Matlab, LaTeX, TinkerCAD, AutoCAD

**Embedded & Hardware:** Arduino, Raspberry Pi, FPGA (Xilinx), Oscilloscope, Sensors

**Databases:** SQL, MongoDB

## Leadership & Extracurricular

- Published a research paper for the topic "Biquad filter using VDTA" in the VTU journal titled International Journal of Science, Technology, Engineering and Management" (IJSTEM).
- Volunteered with Adama Yuva Chetna, a charity organization, during the pandemic, distributing food, clothes, and blankets to those in need, while also helping to plant trees across various parts of the city to promote environmental sustainability.