

# Nimish Goel

607-793-7410 | [ng449@cornell.edu](mailto:ng449@cornell.edu) | <https://ngoel-7.github.io>

## EDUCATION

### Cornell University, College of Engineering

Bachelor of Science, Computer Science and Engineering, GPA: 3.86

Ithaca, NY

Expected May 2027

International Scholar (Need-aware merit-based Full-Tuition Scholarship), awarded to 4 Indian students from over 1200 applicants.

### United World College USA

IB Diploma Programme, GPA: 3.99, SAT: 1540

New Mexico, USA

2021-2023

**Coursework:** Digital Logic, Analog Circuits, Data Struct & Algorithms, Probability and Stats, Data Science, Intro Machine Learning, Embedded Syst., Python, Software Development, Linear Alg., Differential Eqns., Intro Game Theory, Databases (SQL and MongoDB), Computer Architecture, Signals and Systems, Robotics Operating Systems

## SKILLS

Python (NumPy, pandas, matplotlib, PyTorch, scikit-learn), Java, OCaml, Arduino/ C/C++, MS Office, (System)Verilog, SQL/ NoSQL, Git, Assembly Language, ROS, Microcontrollers, GitHub, VS Code, Financial Modelling

## PROFESSIONAL EXPERIENCES

### Research - Prof. Zhiru Zhang, Cornell Computing Systems Lab

Jan 2025-May 2025

- Implementing Neuron Kernel Interface (NKI) kernels on AWS based Tranium 2 optimizing Llama 3.2
- Gained experience with PyTorch and NumPy while increasing efficiency of three existing kernels with goal to compete in ASPLOS 2025 contest.

### Robotics and Machine Learning Intern - Artificial Intelligence and Robotics Lab, Cornell Tech

Jun- August 2025

- Designed and expanded a Multi-Agent Reinforcement Learning based Hospital ER simulator to multiple patients; Researched and implemented Fairness heuristic & Hierarchical-MARL algorithms, promoting human-robot coordination.
- Wrote python scripts to run jobs through SSH on supercomputing Linux cluster; analysed efficiency results on Wandb.
- Created systematic final report and presented to Lab and wider Cornell University audience in symposium.

### Machine Learning and Firmware Intern - Myovara (Startup)

Jun 2025- Ongoing

- Collaborated with team to implement BLE firmware to interface between ESP32-S3 and a python-based receiver. Presented report on potential limitations of on-device NN processing and led MCU component selection.
- Developing NATO words speech to text model with CNN + BiLSTM + CTC loss architecture; achieved 86% accuracy

**Course TA :** Programming in Python (FA '24), Digital logic and Computer org. (SP '25), Math Peer Tutor (on-campus Job)

## PROJECT EXPERIENCE

### Cornell Electric Vehicle Project Team, Electrical team Member

November 2023 - Present

- Managed team of 3; implemented CAN, SPI and UART between ESP 32 and Raspberry Pico: involving RPM, joystick and thermistor for the Data Acquisition System. Working on strain gauge and IMU integration.
- Designed, tested and iterated auxiliary PCBA for vehicle subsystems using Altium, Prototyped auto-dimming headlights using photoresistors, designed and built comprehensive wire harness.

### NBA Player Value Estimate Statistical Analysis

Fall 2023

- Built composite metric evaluating 10 most over/underpaid players; developed LS regression, calculated correlation coefficients, and developed K-NN & RF models using independently scripted salary and statistical dataset
- Presented profitable salary correction strategy using 5 years of historical data to increase average team revenues by 23%

### RC Rover with FRDM-KL46Z Controller Board

Spring 2025

- Devised tuple- based rapid UART communication and algorithm to use on-board touch capacitor as directional input using differential steering.
- Implemented dual PWM control on ARM-based MCU for motor controller and debugged RTOS iteratively.

### To-do List App, Backend Lead

Fall 2024

- Engineered robust task management features: custom reminders, nested lists, subtask checkoff, and sorting via OCaml
- Defined high-level system architecture and integrated backend with GUI/terminal clients, managed GitHub workflow

### PCIe DMA Offload Controller for IKS Accelerator

May 2025- Ongoing

- Architected and integrated a PCIe Gen4×16 interface on a Xilinx Alveo V80 to replace CXL.cache coherency with an explicit DMA-driven controller for moving query vectors and parameters into the IKS accelerator's scratchpad.
- Designing and implementing a Linux driver and XRT/XDMA API plus a unified Vivado Verilog testbench (mac\_tb.v) to DMA query vectors over PCIe Gen4×16 into a Versal V80 near-memory accelerator (68 FP16 MACs + Top-K logic), validating against Python test patterns and sustaining up to 31 GB/s throughput.

### Supersonic Aerodynamics Review Paper

July - August 2022

N. Goel and S. Jawahar, "Towards a Supersonic Transport: Minimization of Sonic Boom", *J Stud Res*, vol. 11, no. 3, Aug. 2022.  
<https://doi.org/10.47611/jsrhs.v11i3.3391>

- Sole author of 7,500-word review paper examining novel challenges in commercial supersonic flight, sonic boom mitigation strategies and corresponding airframe design evolution over last 50 years.
- Successfully Published after 8-week peer-review process with 2 revisions, advised by S. Jawahar.

## LEADERSHIP

---

### Engineering Corps – Co-Founder

*January 2021 - May 2023*

- Raised budget of \$2750 and led 3 simultaneous projects, presented technical pitches for water treatment plant repair after a large wildfire in the region & coordinating with campus facilities department to pioneer shop/tools course.
- Designed and tested aero modelled airplanes using 3D printed parts and performed servo optimization using Arduino
- Team mentor for ISEF Finalists (2023), placed third within state amongst over 55 teams.

## HONORS

---

- International Financial Olympiad held at *BSE India*, National Finalist (2021) amongst 22 out of 7000 nationally
- *HKG Science and Technology Uni* (Summer 2024): fully funded summer exchange research and academic program

**Languages:** Native fluency in English & Hindi; Elementary French & Spanish

**Interests:** Club Badminton (High school team captain), Soccer, Tech. and global economics/ financial trends.