Kunal Gupta

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EDUCATION

New York University   Expected June 2026
Bachelor of Science, Computer and Electrical Engineering, Minor in Robotics (Dean's List)   GPA: (3.93/4)
Academic Focuses: Deep Learning, Full Stack, Software Engineering, Embedded Systems, Genomics, Medtech

INDUSTRY EXPERIENCE

Boston Scientific   Summer 2025 (ongoing)
Firmware & Software Research and Development Intern   **C++, Python, Java, Embedded Systems Design**

- Designed and developed a high-performance server to connect the entire Urology R&D team (through clients, GUIs, and automation scripts) to a hardware simulation of a surgically implanted urology device
- Supports 100+ concurrent clients and coordinates 8 Arduino devices simulating pressure and temperature, all with sub 10 millisecond latency.
- Refactored 20K+ lines of legacy code into a fully tested, maintainable service layer (100% coverage); stress-tested with 40,000 requests from 40 clients to ensure safe, repeatable server validation.

Commure   Summer 2024, Fall 2022
Software Engineering Intern   **React, CSS, Python, OpenAI API, SQL, Google Cloud Platform**

- (Summer 2024) Designed and implemented an electronic prescription platform enabling hundreds of doctors to send prescriptions to U.S. pharmacies utilizing SQL, Python, and React.
- Integrated and certified with the national e-prescription API in just four months—far exceeding the typical 2–3-year certification timeline.
- (Fall 2022) Integrated an account creation step into the company's front-end, eliminating the need for multiple contracts, forms, and calls. Reduced onboarding time by 40% resulting in higher sales efficiency.

PUBLICATIONS

- **E. Tyacke, K. Gupta, J. Patel, R. Katoch, S.F. Atashzar.**
  From Unstable Electrode Contacts to Reliable Control: A Deep Learning Approach for HD-sEMG in Neurorobotics.
  In *IEEE International Conference on Robotics and Automation (ICRA)*, 2024. IEEE Link
- **E. Tyacke, K. Gupta, J. Patel, R. Li.**
  IsoNet: Causal Analysis of Multimodal Transformers for Neuromuscular Gesture Classification.
  arXiv preprint arXiv:2506.16744

RESEARCH

Boeke Laboratory   Jan 2024 - Present
Bioinformatics Researcher   **PyTorch, JASPAR, CRISPR, Stem Cell Culture, Molecular Biology Techniques**

- Developed a Python library leveraging generative AI to design synthetic regulatory DNA like promoters / enhancers.
- Demonstrated AI generated synthetic regulatory DNA's impact on gene expression in mouse embryonic stem cells (mESCs), advancing applications in gene regulation research.
- Optimized model to train 16x faster through distributed data parallelism and mixed precision; tailored model for wide-format DNA sequence data and small-scale feature extraction.

Medical Robotics and Interactive Intelligent Technologies Laboratory   Jan 2023 – Present
AI Researcher   **PyTorch, TensorFlow, MATLAB, Simulink, HPC**

- Achieved the highest recorded classification accuracy (98.03%) on a benchmark EMG dataset, leveraging a novel multimodal transformer deep learning model
- Developed a deep learning model enabling prosthetic limbs to recognize and execute up to 65 distinct gestures, a significant advancement over the standard two-gesture (open/close) systems on the market.

Dynamical Systems Laboratory   Jan 2024 – May 2025
Firmware Researcher   **Altium, KiCad, PCB Design and Assembly, Arduino**

- Developed a haptic vest enabling blind / visually impaired individuals to "see" their environment through tactile feedback, conveying the location and distance of obstacles without relying on a cane. Improved traversal speeds by 1.4x and reduced the number of collisions by 2x.
- Designed and built custom electronics using Altium and soldering; the final design ensured high contact, comfort, and washability, with concealed wiring for a fashionable and practical design.