Nehal Singhal

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EDUCATION

Georgia Institute of Technology   Atlanta, GA
Bachelor of Science in Computer Engineering. Minor in AI/ML and Mathematics — GPA : 4.0   *May 2027*
- Relevant Coursework : Data Structures Algorithms, Digital System Design, Differential Equations, Discrete Mathematics, Java OOP, Linear Algebra, Multivariable Calculus, Design/Analysis of Algorithms, Programming for Hardware/Software Systems

EXPERIENCE

Artificial Intelligence Developer Intern   May 2025 – August 2025
Machadalo   *Noida, India*
- Orchestrate end-to-end data-scraping infrastructures using Python (Selenium, BeautifulSoup, Chrome WebDriver) and AWS (S3, EC2), automating high-volume data extraction and ETL pipelines to power strategic analytics.
- Design and implement vector-embedding architectures with Pinecone and OpenAI Embedding API, integrating Retrieval-Augmented Generation (RAG) and semantic searching via LangChain to deliver Multi-Agent AI-driven chatbots for high-impact clients, including Mercedes India.
- Spearhead the development of Machadalo's custom product API in Django within Dockerized environments, leveraging Git workflows and cross-functional collaboration to deploy secure, scalable services that align with organizational goals and client requirements.
- Built an OpenAI-powered Django API to transcribe voice, summarize content, and applied NLP techniques (sentiment analysis, key-phrase extraction) via specialised instructions for front-end integration in our B2B No-Code IQS Product.

Undergraduate Teaching Assistant under Dr. Edwin Greco   Jan. 2025 - Present
Georgia Institute of Technology   *Atlanta, GA*
- Instructed and mentored 60+ students in weekly laboratory experiments and problem-solving sessions for Physics 2212 - Electricity and Magnetism, a challenging physics course typically undertaken by upperclassmen.
- Devised a circuits-based laboratory experiment, selected for implementation across the 1000+ student course curriculum.

Undergraduate Researcher under Dr. Thad Starner   Jan 2025 - May 2025
Georgia Institute of Technology   *Atlanta, GA*
- Engineered robust data pre-processing pipelines, utilizing Python and MediaPipe, to enhance the quality of sign language datasets, improving model input consistency by an estimated 20% for PopSign AI, a project by Google and Georgia Tech.
- Designed and evaluated machine learning models (CNNs, Transformers, etc.) for phrase, fingerspelling, and ISLR recognition, achieving a 25% improvement in recognition accuracy through iterative model refinement.

PROJECTS

Therafit | *React + Vite, Flask, LangChain, RAG, MongoDB, Azure*   April 2025 - June 2025
- Engineered a custom RAG pipeline with Flask, trained on a comprehensive dataset of over 20,000 physical therapy exercises, leveraging semantic search and vector embeddings to dynamically generate personalized exercise prescriptions.
- Implemented a robust multi-agent data model with CRUD for dynamic workout playlists, enabling immersive, shuffled playback for exercises with synchronized timer and music using React.

Board. | *Azure OpenAI, React + Vite, CosmosDB, Azure Containers,*   May 2025 – June 2025
- Developed a full-stack, real-time collaborative platform leveraging React (Vite) and Node.js/Express with Socket.IO, featuring instant multi-user board editing and post updates, and integrated AI-powered summarization for instantly contextualizing user content for their own AI queries.
- Implemented secure, role-based access control using JWT authentication and custom middleware through REST APIs, as well as architected seamless file management with Azure Blob Storage, while utilizing advanced NLP models and Computer Vision to have in-app conversation with AI, using context from the user's board- through posts including pdfs, images, text, URLs, etc.

Project Lead @ DataGen | *Next.js, Deep Learning, Reinforcement Learning, PyTorch, Fast API*   Jan 2025 – Present
- Leading 15+ developers at Big Data Big Impact at Georgia Tech to generate custom datasets by learning from user feedback to help engineers and researchers acquire large amounts of data from the web using Deep reinforcement learning techniques.

Project Lead, Trading at GT | *React, Spring Boot, AWS, Socket.io, Data Visualisation*   Jan 2025 – Present
- Lead a team of 5+ developers to make a stock-exchange like trading platform for the trading club's in-house and external trading competitions. Using React, Node, Express, WebSockets, Javascript, HTML/CSS and integrating with our custom Spring Boot API.

TECHNICAL SKILLS INTERESTS

Languages: JavaScript, TypeScript, Python, SQL (Postgres), HTML, CSS, Java, C/C++
Frameworks: React, Node.js, Flask, JUnit, Next.js, FastAPI, Prisma, MongoDB, Django, Spring Boot, Angular
Database And Storage: SQL, NoSQL, Prisma, MongoDB, CosmosDB, Postgres
Developer Tools: Git, Docker, Google Cloud Platform, VS Code, Visual Studio, PyCharm, IntelliJ, Azure, AWS, Figma, Dify.ai
Libraries: pandas, NumPy, Matplotlib, PyTorch, LangChain, LanGraph, OpenAI API, Gemini API, Pinecone, ShadCN, seaborn
Interests: Cricket, Formula 1, Design, UI/UX, Sustainability, Public-Speaking, Machine Learning, Piano, Dholak/Tabla, Entrepreneurship, Food, Silicon Chips