# Neel Gajare

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## Education

**University of California, Berkeley** — Berkeley, CA
**B.S. EECS (Electrical Engineering & Computer Science)** — *Expected May 2026*

Relevant Coursework (3.73 GPA): Circuit Analysis & Design, Advanced Algorithms, Computer Architecture, Data Structures, Discrete Math & Probability Theory, Linear Algebra, Multivariable Calculus, Electricity & Magnetism, Mechanics, Competitive Programming

Societies: Space Technology @ Cal, Cloud Computing @ Cal, Computer Science Mentors

## Experience

**Berkeley AI Researcher** — Dec 2023 – Present
*Berkeley AI Research Lab (BAIR)* — *Berkeley, CA*

- Working under Professor Kurt Keutzer on Generative AI project pertaining to low resource machine translation and linguistic segmentation.
- Utilized Langchain, Chroma, Milvus, CUDA, and NVIDIA AI endpoints to implement efficient Retrieval Augmented-Generation techniques on billion-token corpus to improve translational model. Integrating vector database to backend system and API with FastAPI. Researching hybrid search techniques to enhance retrieval system.

**Stanford Research Intern** — May 2022 – Feb 2024
*Stanford University* — *Palo Alto, CA*

- Worked in Stanford's Crustal Deformation Lab under Professor Paul Segall. Researched complex basaltic magma chamber geometries using AI.
- 1st Author of abstract published in American Geophysical Union (AGU) conference proceedings, presented in AGU Fall Meeting.
- Utilized Gmsh for 3-D mesh generation to model magma chambers, Matlab for simulation of surface deformation and Bayesian optimization techniques.

**Hackathon Organizer** — Jun 2021 - Jan 2023
*ThetaHacks* — *Santa Clara, CA*

- Student-run hackathon with over 500 participants, 25 sponsors, 20 volunteers, and 14 events.
- Allocated $20,000 total in prizes and merchandise to competition winners and attendees.
- Leveraged strategic social media marketing by publishing blogs on various sites and creating posts across numerous social media platforms. Facilitated and supervised participants and managed events.

**TieCon Entrepreneurship Bootcamp** — Aug 2021 – Mar 2022
*TiE Silicon Valley* — *Santa Clara, CA*

- Developed startup idea for product that uses AI to fix user's sitting back posture. Designed 3-D model & mobile app.
- Received testimonials from professional therapist. Planned market strategy and projections. Won #1 Diligent Team Award @ TYE PitchFest.

## Awards

- NVIDIA National Merit Scholarship — May 2023
- Climate Science Olympiad Semifinalist — Aug 2022
- St. Francis de Assisi Volunteering Award — May 2022

## Projects

**UniTrial** | *Python, Firebase, Streamlit, HuggingFace, ChromaDB, Mistral AI* — June 2024

- Developed RAG system to match patient EHR profiles/ medical condition descriptions with clinical trials using Mistral-7B.
- Implemented novel data schema leveraging FHIR and MESH IDs to log medically relevant tags, preventing hallucinations from unstructured data.
- Created RAG pipeline with chat interface for users with to ask questions about trial & get diagnosis.

**Kaggle Expert** | *Python* — Mar 2019 – Present

- 2x expert in datasets & notebooks on Kaggle platform for publishing datasets & blogs which garnered over 10k dataset downloads & 200k blog views.
- Used data scraping techniques to collect large amounts of data from sites like Reddit, Twitter, and Google.
- Performed and published data analysis and applied machine learning models like CNNs, Transformers, and GANs.

**TIME II** | *STM32 Microcontroller, PCBA* — Dec 2023 – Present

- Working on project at Space Technology @ Cal, which will send a payload to a suborbital Blue Origin flight to conduct E. coli microgravity experiments.
- Programmed STM32 microcontroller to maintain optimal temperature in the capsule via thermistors.

**Voice-Controlled Car** | *Arduino, Python* — Jan 2024 – May 2024

- Built a mic-board using a band-pass filter to detect and filter out human voice frequency for voice recognition.
- Used PCA to classify words for the car to recognise and respond correctly.
- Implemented a closed-loop feedback system for the car to drive straight and turn on a micro-controller using encoder data.

## Technical Skills

**Languages**: Python, Java, C++, Matlab, SQL, HTML/CSS, Scheme, Javascript, LaTeX, C
**Frameworks/Tools**: LangChain, Pytorch, Keras, OpenCV, Gmsh, Tableau, Windows, Requests, Numpy, JUnit, Git, Excel, STM32Cube, Arduino, Seaborn, AWS, Node.js, Express, React, Tensorflow, MongoDB, Mongoose, OpenAI, HuggingFace, BeautifulSoup, Matplotlib, Chroma, FastAPI, Jupyter, Anaconda, Linux, Firebase, Streamlit, Milvus, RISC-V
**Skills**: AI/ML, Data Processing/Analysis, PCB Assembly, Microcontrollers, Web Development, NLP, Research