Archan Sen

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EDUCATION

University of California, Berkeley | Bachelor's Degree in Mathematics & Computer Science — Expected May 2026

- **Relevant Coursework:** Data Structures, Algorithms, Data Analysis, Abstract Linear Algebra, Real Analysis, Data Science & Statistics, Introduction to Quantitative Modelling.

EXPERIENCE

Lightning AI — October 2024 - Present

Machine Learning Contractor

- Developed an ML model to improve noise isolation in audio signals, catered to audio companies.
- Used Lightning AI's novel library, PyTorch Lightning, to showcase SOTA new abstract machine learning tools.

Arcus Power — June 2024 - August 2024

Machine Learning Engineer (MLE) Intern | Online

- Created a ML system used by 120+ companies using 35000+ streams of time-series data to predict energy prices.
- Enabled users to use plain-text queries to access dynamic features such as real-time interactive graphs using large language models (LLMs).

PROJECTS

Math Research — December 2021 - December 2022

Co-Author | Aarhus University

- Published research paper that discovered the first ever explicit formula for computing Generalized Markov Numbers.
- Discovered new formulae to simplify continued fractions and inductively prove recursivity in Markov Numbers.
- Paper was published in Ramanujan Journal and a novel formula for a sequence published in the OEIS.
- Presented results at the University of Minnesota's Undergraduate Math Research Seminar.

Sketch-to-Face GAN | *Python*

- Created a Generative Adversarial Network (GAN) that generated realistic human faces from sketches.
- Created custom architecture with 400 initial images and generated 17,000+ samples through various transformations.
- Used Keras, TensorFlow, and scikit-learn to achieve deep learning over 50+ epochs.
- Discriminator loss converged to 4.01, showcasing the generator's ability to accurately create realistic looking faces.

N-grams | *Java, JavaScript, HTML*

- Developed a browser-based tool to explore historical word usage in English using time-series analysis.
- Created custom data structures for efficient processing of large-scale linguistic data.
- Implemented backend functionality for data parsing, analysis, and visualization of Google Ngram dataset.

Music Popularity Predictor | *Python*

- Created a neural net to predict the popularity of music given factors such as duration and acousticness.
- Utilized Pandas, TensorFlow, and Keras libraries to achieve r^2 loss of 0.3 on test sets.
- Model could predict popularity on a scale of 1-100 with an accuracy of ~5%.

Tile Based 2-D Game | *Java*

- Utilized Java and object-oriented programming to create a game featuring a movable character and coin collection.
- Applied Java's Random class to generate pseudo-random rooms that all fulfilled basic requirements.
- Added dynamic lighting effects and mouse hover functionality to provide real-time tile information.

CAMPUS INVOLVEMENT

Debate | Captain

- Nationally ranked as a top-20 debater in collegiate policy debate. Thrive in a fast-paced environment with my team.
- Founded the Next Step Debate Institute, a free summer one-week debate camp for underprivileged students. Had 100+ students each year that it's been running. Coordinate with 25+ nationally ranked coaches annually.
- Intellectually curious-learn about new topics ranging from critical theory to government processes every day.

Machine Learning at Berkeley | Research Team

- Coordinate with ML experts like Berkeley professors and ML Engineers at TikTok to give lectures on novel developments in the field, ensuring we maintain up to date on new research papers and concepts in the field.
- Contract out ML skills to Silicon Valley companies every semester. Partnerships with NASA, Autodesk, and Github.

SKILLS

Languages: Python, Java, C++, JavaScript, Scheme, SQL, R

Frameworks/Libraries: PyTorch, CUDA, NumPy, Pandas, ggplot2, Matplotlib, Keras, TensorFlow