

Sean Fuhrman

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Master's student in Electrical Engineering at the University of California, San Diego, specializing in Data Science and Machine Learning, with an undergraduate degree in Computer Engineering. Over 10 years of programming experience, including 3+ years focused on Python and PyTorch for machine learning model development.

Proficient in web development (HTML/CSS/JavaScript) and well-versed in Deep Learning, Predictive Modeling, Algorithms, and Object-Oriented Programming.

EDUCATION

- **University of California, San Diego** San Diego, CA
M.S. Electrical Engineering. Focus: Data Science and Machine Learning; GPA: 3.7 *Sept. 2024 – June 2025*
- **University of California, San Diego** San Diego, CA
B.S. Computer Engineering; Major GPA: 3.94; GPA: 3.81 *Sept. 2020 – June 2024*
 - **Awards:** Henry G. Booker Memorial Honors; Provost Honors

PUBLICATIONS

- W. Xu, V. Swaminathan, S. Pinge, **S. Fuhrman** and T. Rosing, "HyperMetric: Robust Hyperdimensional Computing on Error-prone Memories using Metric Learning," 2023 IEEE 41st International Conference on Computer Design (ICCD), Washington, DC, USA, 2023 pp. 243-246.

SKILLS

- **Programming Languages:** Python; Javascript; HTML/CSS; C++/C; Bash;
- **Frameworks/Packages:** PyTorch; NumPy; Pandas; Matplotlib; scikit-learn; Git; Jupyter; React; Node.js;

EXPERIENCE

- **System Energy Efficiency Lab - University of California, San Diego** San Diego, CA
Graduate Student Researcher *March 2024 – Present*
 - Leading a research project focused on Continual Learning for Intrusion Detection Systems.
 - Developed a novel PCA-based detection algorithm, achieving a 2x improvement in detection accuracy over current state-of-the-art methods.
 - Conducted comprehensive research into current state-of-the-art methods, successfully replicating and benchmarking existing approaches.
- *Undergraduate Research Assistant* *July 2022 – Present*
 - Assisted with research on hyper-dimensional computing algorithms and its use for energy-efficient processing-in-memory machine learning.
 - Authored research paper on combining metric learning with hyper-dimensional computing algorithm to increase model accuracy and error robustness.
 - Developed PyTorch model to simulate machine-learning algorithm running on error-prone analog hardware.
 - Presented research at JUMP 2.0 undergraduate research symposium to professors and industry members
- **Art of Problem Solving** San Diego, CA
Software Engineering Intern *June 2023 - August 2023*
 - Developed 50+ printable engines using React with a Node.js backend, automating online math problem conversion into printable formats; collaborated closely with design and development teams.
 - Led a comprehensive study on prompt engineering, integrating Large Language Models for automated language translation. Developed a proof-of-concept demonstrating the effectiveness of these models in translation while maintaining custom markup language syntax.

PROJECTS

- **Wardrobe Wizard:** Developed a GAN that changes clothing based on text descriptions.
- **FogBot:** Created a Deep Q-Learning chess bot for fog-of-war chess, learning through self-play.
- **Shazam 2.0:** Built a CNN for music genre classification; showcased in a [poster](#).
- **Personal Website:** Designed a personal resume website at seanfuhrman.com.
- **Room Automation System:** Implemented a microcontroller-based voice-activated assistant.