

Zachary Deutsch

zachary.deutsch@duke.edu | (312) 989-5658 | zacharydeutsch.com

Education

DUKE UNIVERSITY

Durham, NC

B.S. Mathematics; B.S.E. Mechanical Engineering; Minor in Machine Learning; Minor in Philosophy; GPA: 3.7 August 2024 – May 2027
Coursework: Calculus I–III; Linear Algebra; Differential Equations; Probability; Statistics & Data Analysis; Data Structures & Algorithms

UNIVERSITY OF OXFORD

Oxford, England

Study Abroad: AI and Ethics June – August 2025

Experience

DUKE UNIVERSITY, Oca Lab

Durham, NC

Machine Learning Researcher

October 2025 – Present

- Benchmarked LLM hallucination rates in reasoning tasks using Monte Carlo simulation to estimate error distributions and tail risk

DUKE UNIVERSITY, Hickey Lab

Durham, NC

Machine Learning Engineer

November 2024 – Present

- Designed and benchmarked unsupervised clustering pipelines on ~1M high-dimensional spatial-omics observations, improving signal quality and classification accuracy under noisy data conditions

TEL AVIV UNIVERSITY, Center for AI and Data Science

Tel Aviv, Israel

Machine Learning Research Intern

May – August 2025

- Evaluated quantile-based feature extraction for sEMG time-series classification, benchmarking predictive performance across multiple classifiers

SHIRLEY RYAN ABILITYLAB

Chicago, IL

Data Science Intern

June – August 2024

- Analyzed outcomes from a \$1.5M DoD-funded study using statistical analysis and visualization to support performance evaluation and data-driven decision-making

Publications

- **Deutsch, Z.,** Eva, R., & Oca, S. R. (2026). *Virtue ethics and student use of large language models in engineering education*. IEEE Frontiers in Education Conference.
- **Deutsch, Z.,** & Oca, S. R. (2026). *Evaluating engineering students' detection of hallucinations in large language model solutions*. American Society for Engineering Education Annual Conference.
- **Deutsch, Z.** (2025). *Superintelligence, Instrumental Convergence, and the Limits of AI Apocalypse*. AI and Ethics (Springer Nature).

Skills, Awards, & Interests

Technical: Python (NumPy, pandas); SQL; APIs (OpenAI, Anthropic, Google)

Languages: Japanese (Limited Working Proficiency); Spanish (Limited Working Proficiency)

Awards: 1st Place J.P. Morgan GenerationTech, Google Scholarship, National Youth Science Academy

Interests: Espresso, Liszt, Stoicism, Nietzsche, Cycling