Benjamin Grayzel

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Education

Dartmouth College, Hanover, NH — ***M.S.*** **Sep 2024 - Current**
Master of Science, Computer Science (AI Focus) — ***B.A.*** **Sep 2020 - Jun 2024**
Bachelor of Arts, Major in Mathematics, Minor in Government

London School of Economics and Political Science, London, UK — **Sep 2022 - Dec 2022**
IR-focused study abroad program with Dartmouth's Government department. Culminating research on emerging technologies in interstate gray-zone activity, focus on AI information & drone conflict.

Relevant Experience

Farallon Capital Management, San Francisco, CA
EXPLOR (Knowledge Management) Intern — **Jan 2025 - Mar 2025**

- Developed & deployed full stack pipeline to visualize prediction market data from multiple sources, augmenting centralized search & info capabilities with AI tools.
- Data pulled from APIs on a daily cycle, merged/processed in unified schema, inserted into database, pulled dynamically and visualized in a search engine augmented with AI keyword extraction and semantic filtering.

CND Life Sciences, Phoenix, AZ
Financial Analyst Intern — **Jun 2023 - Dec 2024**

- Developed and deployed an interactive web application using R markdown's shiny framework to help sales team interface with customer data, facilitating over 50 hours of engagement in beta release (first 100 days).
- Leveraged R to transform, analyze, and visualize customer data, enhancing real-time data-driven decision-making for sales and leadership teams, presented insights to company leadership leading to policy change.
- Completed a full-time summer internship summer 2023, retained part-time to maintain & update application software.

Independent Work
Election Forecasting: Data Scientist & Web Developer — **May 2024 – Nov 2024**

- Designed and built an Election Forecast for the 2024 US Presidential Election and affiliated Substack utilizing a suite of R packages (shiny, leaflet, tidyverse) interwoven with Python, HTML, and CSS scripts.
- Website provided received 130 usage hours across 500 independent viewers in the first month; state forecasts, historical trends, polling results, and other analysis to thousands of viewers throughout the election.

Dartmouth College, Hanover, NH
Research Assistant — **Jan 2023 - Mar 2023**

- Managed and compiled extensive datasets of Facebook responses to digital anti-extremism campaigns demonstrating adeptness in data compilation and wrangling.
- Conducted sentiment analysis on textual data through an LLM wrapper, showcasing proficiency in API utilization and data transformation techniques.

Academic Work

Notable Papers & Projects

3D Particle-Based Fluid Simulation

- Developed an advanced fluid simulation iterating on a discretized 3D particle fluid simulation based on the Lagrangian formulation of incompressible Navier-Stokes with solid body coupling, irregular containment, and interbody friction.

Lucid Dreaming Induction System

- Collaborated on a real-time EEG/EOG neurofeedback system with overnight deployment for lucidity induction; designed and implemented eye-movement (LRLR and REM) classification models used for low-latency sleep-stage inference.

Transparent Activation Steering for Robust Toxicity Control

- Developed and evaluated an activation steering method for LLM toxicity control by training linear probes on mid-layer activations in gemma-3-1b, achieving significant manipulation of toxicity levels on in-distribution prompts.

LLM Multi-Agent Code Review System

- Designed and benchmarked an agentic code-generation framework (MCP + LangGraph + GitHub) on HumanEval, showing single-agent ReAct outperformed two-step orchestration by ~11% with failures driven primarily by tool-use errors rather than code correctness. Explored benchmarking strategies to analyze behaviors in multi-agent systems. Poster.

Evaluating Agentic Research: Single-Agent vs Autonomous Multi-Agent Decomposition

- Conducted a large-scale empirical evaluation of single-agent vs. autonomous multi-agent LLM deep research systems, showing no accuracy gains but ~2× higher cost and slower execution for autonomous decomposition. Preprint.

An Exploration of Bad Actors in Viral Fact-Checking Models

- Recreated a computational model of viral belief spread using Python and R, analyzing the impact of adversarial actors on phase transition behavior in the large-network limit, showing that even a single immutable adversary can enable endemic persistence of hoaxes in ER and BA networks under certain conditions. Interactive web application. Hyperlink.

State Media Tagging Does Not Affect Perceived Tweet Accuracy

- Co-authored a preregistered U.S. survey experiment (N≈2,500) with faculty and a student research cohort evaluating adversarial information tagging strategies, finding that state-affiliated media labels had no effect on belief accuracy while fact-check labels significantly reduced misperceptions. Publication.

Notable Coursework

- *Computer Science:* Machine Learning, Deep Learning, DL Generalization & Robustness, ML Security & Interpretability, Applied AI for Neurotech, Network Science, Physical Simulation, Discrete Math
- *Mathematics:* Real Analysis, Multivariate Statistics, Probability, Abstract Algebra, Applied Mathematics, Diff EQs
- *Physics:* Kinematics, Foundational Electromagnetism & Quantum Mechanics
- *Government:* International Relations, Global Politics of China, Subversive Statecraft, Quantitative Political Analysis
- *Miscellaneous*: Data Visualization (QSS), Social Psychology (PSYC), Discrete & Probabilistic Systems (ENGS)

Other Skills & Interests

Programming Skills: **R**, **Python**, C/C++, Java, Bash/Shell (Mac), SQL, React, Typescript, HTML/CSS, LaTeX, MATLAB

Technical Skills: Machine Learning, Deep Learning, AI Engineering, Agentic Orchestration, Data Visualization, Data Science, Data Engineering, Web Development, Network Analysis, Physical Simulation, Probability & Statistics, Writing & Editing

Outdoor Skills: First Aid & CPR, Wilderness First Aid, Mountaineering, Professional Cooking, Lodge Accommodation

Other: Invited to YCombinator's 2025 AI Startup School. Second Degree Black Belt (Tae Kwon Do). Sigma Nu Risk Management. Wrestling (HS Captain & National Qualifier).