Satch Sumner-Waldman

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EDUCATION

Massachusetts Institute of Technology, M.S. *Technology and Policy* Cambridge, MA | Class of 2027
Relevant Courses: Microeconomic Theory and Public Policy, Concepts and Research in Technology and Policy

Brown University, B.S. *Electrical Engineering* Providence, RI | Class of 2023
Relevant Courses: Machine Learning, Data Structures & Algos, Calculus I - III, ODE, PDE, Linear Algebra, Statistical Inference

AI ALIGNMENT EXPERIENCE

MIT AI Alignment (MAIA), *Member* Cambridge, MA | Sept 2024 – Present
- Completed the MAIA AI Safety Fundamentals Alignment Course, a 6-week survey-level course on reward hacking, RLHF, mechanistic interpretability, adversarial attacks, red-teaming, scalable oversight & control, and technical AI governance.
- Conducted independent research on grokking as well as AI model architecture design (transformers vs. MLPs, and architecture variations within MLPs) for different learning tasks (e.g., modular arithmetic, boolean algebra).

BlueDot Impact, *AI Governance Course Member* Remote | Jan 2025 – April 2025
- Completed the 12-week AI Governance Course (~5 hrs/week), covering policy levers (e.g., immigration, funding), regulatory landscapes (US, China), compute governance, and efficacy of responsible scaling policies (RSPs), vs government regulation.

RESEARCH EXPERIENCE

MIT Laboratory for Information & Decision Systems, *Research Engineer* Cambridge, MA | Nov 2023 – March 2025
- Translated a power system modeling and simulating software library (“CAMPS”) from MATLAB to Python.
- Created a graphical drag-and-drop interface for CAMPS, enabling non-coders to model and simulate power systems easily.
- Developed a "Digital Twin" software to simulate how various aspects of a power system (e.g., fast-timescale dynamics, generator controls, and economic factors like energy pricing and cost savings) evolve over time.
- Used the Digital Twin to evaluate the feasibility of the Bronzeville, Illinois Community Microgrid given a proposed redesign.

Laiwalla Laboratory at Brown University, *Undergraduate Researcher* Providence, RI | Sept 2022 – May 2023
- Developed Simulink code to process BPSK signals from brain-implanted chips; BPSK signals are sinusoidal, and my code used an FFT and Costas Loop to lock onto and decode these signals given that they were within a specified frequency range

NeuroPi Startup at Brown University, *Electrical Engineering Group Lead* Providence, RI | Jan 2020 – May 2022
- Designed a printed circuit board to record neural activity, amplify and denoise these signals, and wirelessly transmit them

PROFESSIONAL ENGINEERING EXPERIENCE

Backpack Networks, *Embedded Systems Engineering Intern* Austin, TX | June 2022 – Aug 2022
- Developed C/C++ code for energy-monitoring devices to enable wireless communication between these devices and a hub.
- Tested different hardware modules and communication protocols to optimize signal strength and transmission time.

Greensight Agronomics, *Junior UAV Mechanical Engineer* Boston, MA | May 2021 – Aug 2021
- Designed quadcopter components in OnShape (a 3D modeling software) for autonomous drones used to monitor soil water content in vineyards and golf courses, enabling these facilities to reduce water consumption by up to 95%.
- Used 3D printing, CNC machining, soldering, breadboarding, and Lua scripting to prototype drone components.

LEADERSHIP & COMMUNITY INVOLVEMENT

MIT Chamber Music Society, *Jazz Band Member* Cambridge, MA | Sept 2024 – Present
- Composed, arranged, rehearsed, and performed improvisation-based jazz music at MIT recitals and events

Brown University School of Engineering, *Undergraduate Teaching Assistant* Providence, RI | Jan 2023 – May 2023
- Led exam review sessions and problem set office hours in the Communication Systems course; designed the final project

SKILLS & INTERESTS

Technical Skills: Python (Proficient), MatLab (Proficient), C/C++ (Intermediate), Java (Intermediate), Verilog (Intermediate)
Interests: Biking, philosophy, music performance (piano, guitar, vibraphone, vocals)