Benjamin Goldstein

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Portfolio: https://bennyg9.github.io/

EDUCATION

Georgia Institute of Technology College of Engineering — *Atlanta, GA*
Bachelor of Science in Electrical Engineering | GPA: 4.0 — *May 2029*

Agoura High School (AHS) — *Agoura Hills, CA*
Valedictorian | GPA: 4.4 — *June 2025*

SKILLS

Hardware: Arduino, Raspberry Pi, Stepper/DC/Servo Motor Control, Various Sensors, Soldering, Multimeter, Oscilloscope
Software: Python, C++, Java, Arduino IDE, VS Code, Linux, Onshape CAD, KiCAD
Libraries: Numpy, Matplotlib
Concepts: Embedded Systems, Motor Control (Stepper, PID), Sensing Circuitry, Heuristic Search, ML Classifiers

PROJECT EXPERIENCE

Autonomous Rubik's Cube-Solving Robot — *Agoura Hills, CA*
Independent Project — *Aug 2024 - Aug 2025*

- Designed, fabricated, and integrated all mechanical, electronic, and software systems achieving **<1 min** autonomous solves
- Drove NEMA stepper motors with hall sensor feedback to ensure fast, accurate, and repeatable cube turning
- Built statistical color recognition algorithm using chi-square tests to reliably map cube faces under varied lighting conditions
- Implemented heuristic-driven depth-first search algorithm in Python on Raspberry Pi finding **≤35 move** solutions

Autonomous Connect 4 Robot — *Atlanta, GA*
Independent Project (In Progress) — *Sept 2025 - Present*

- Developed custom IR detection circuitry with comparator-based thresholding for reliable piece sensing
- Implemented PID-controlled piece placement and optimized bitboard game representation with finite-state control logic
- Programmed pruned minimax-based AI engine to achieve optimal gameplay decision-making

Selected Hardware and Software Projects — *Agoura Hills, CA*
Independent Projects — *Aug 2023 - Aug 2025*

- Built a 9W spark-gap Tesla coil using flyback transformer circuitry, custom capacitor bank, generating **1-1.5 cm** plasma arcs
- Trained CNN skin lesion classifier on NVIDIA Jetson Nano, detecting malignant lesions with **~90% accuracy**
- Developed ML mini-projects including linear regression fuel efficiency model, logistic heart disease predictor, and neural network Flappy Bird player

ADDITIONAL EXPERIENCE

Medical Robotics Club — *Atlanta, GA*
Limbo Electrical Control Team Member — *Sept 2025 - January 2026*

- Contributed to PID control system design driving fingers, thumb, and wrist actuation in a multi-DOF robotic prosthetic hand

AHS Peer Tutoring — *Agoura Hills, CA*
Volunteer Peer Tutor — *Aug 2023 - June 2024*

- Tutored fellow AHS students in Math (Algebra I → Calculus II), Physics, and Chemistry
- Contributed **30+** volunteer hours before school assisting peers with conceptual understanding, homework, assignment management, and test prep

RELEVANT COURSEWORK

Intro Signal Processing, Hardware/Software System Programming, Digital System Design, Differential Equations, Honors Linear Algebra, Calculus I/II, Physics (Mechanics, E&M, Modern), Intro OOP, Statistics

HONORS AND AWARDS

AHS Outstanding Achievement in Science (1 of 4) • AHS Excellence in Computer Science • AP Scholar with Distinction (2x)