Eli Young

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Education

Swarthmore College — Swarthmore, PA
B.A. in Computer Science — *Sept. 2022 – May 2026*

Relevant coursework: Machine Learning, Algorithms, Data Structures, Computer Systems, Computational Analysis of Big Data, Game Development, Discrete Math, Linear Algebra, Statistical Methods I, Calc I-III

Skills

Languages: Python, C++, JavaScript/TypeScript, Java, C, C#, SQL, R, Bash, HTML/CSS, Swift, GDScript
Technologies: React, Node.js, Flask, Docker, AWS, Git, Firebase, Selenium, Tesseract, scikit-learn, PyTorch, TensorFlow, Unity, Godot

Experience

USDA Agricultural Research Service & Swarthmore College — Swarthmore, PA
Applied Machine Learning Researcher — *Sept. 2025 – Present*
- Designing semi-supervised and time-series ML models to classify electropenetrograph (EPG) insect-feeding signals, reducing costly manual annotation.
- Collaborating with USDA ARS and entomologists to integrate algorithms into an open-source EPG analysis toolkit for agricultural pest management.

Calibrr Social LLC — Remote
Software Engineer (Part-time) — *May 2025 – Present*
- Reduced API rate limiting issues with debouncing, cache optimization, and API call reduction by 75% (from 60/min to 10-15/min)
- Enabled profile likes and smart email notifications, set up backend functionality with an EC2 instance, AWS Lambda, and SES structure.
- iOS (Swift), backend (Laravel PHP), and cloud infrastructure (DynamoDB) addressed profile freezing, duplicate likes, and data failures

Center for Digital Agriculture, University of Illinois Urbana-Champaign — Urbana-Champaign, IL
Research Assistant - REU Fellowship — *May 2025 – Aug. 2025*
- Developed ML on 690 eggs' VNIR spectroscopy (374-1015 nm) for prediction of chick gender and mortality through transformers, meta-learning, and gradient boosting. Also conducted PCA of embryo developmental pathways with PC1 capturing 76.7% variance, identifying wavelengths (∼390nm, ∼630nm) for biological classification and addressing 6.5-7 billion wasteful annual male chick culls
- Achieved 98.8% mortality, 59.5% sex classification accuracy, with 100% accuracy on confident predictions, proving commercial viability

Update International Inc. — Remote
Software Engineering Intern — *May 2025 – July 2025*
- Fixed undetected connections in Windows Wi-Fi Direct vibration analysis with C++ JSON persistence and a 2s ping-based check.
- Eliminated thread race conditions and deadlocks and stabilized flaky Wi-Fi adapter behavior, delivering a crash-free production build.

Torchman IP LLC — Remote
Software Engineering Intern — *Sept. 2024 – Apr. 2025*
- Enabled lawyers to rapidly automate processing office actions, track response deadlines, and generate legal response documents.
- Processes USPTO office actions, integrating OCR (tesseract) and Regex, the OpenAI API, and Selenium and BeautifulSoup to extract critical patent data to CSVs, generate patent summaries and response templates, and retrieve referenced PDFs from Google Patents.

Projects

Precise Swine & Dine: Automated Pig Weight Estimation and Feeding Control — GitHub
Computer Vision & ML System for Precision Livestock Management — *Jun. 2025*
- Developed YOLO computer vision detection and morphological feature extraction to estimate pig weights with <5kg MAE
- Implemented ML with Neural Networks (MLP) and Random Forest trained on 9,579 weight-labeled RGB images, extracting 30+ features
- Team of four won Livestock Monitoring Track at AI Foundry for Ag Applications Hackathon, demonstrating a feeding control system

Free Throw vs. Fatigue — GitHub
Statistical Analysis of NBA Player Performance Data — *Sept. 2024 – Dec. 2024*
- Utilized Python to analyze effect of fatigue on NBA free throw accuracy, isolating impact across 24 seasons (1996-2024) and 30 teams
- Engineered web scraping pipelines to track real-time player fatigue by parsing play-by-play data for free throws, substitutions, and in-game time implementing exponential backoff for API rate limit handling and error exception during large-scale data collection
- Visualized players' free throw percentages in consecutive minutes against baseline career averages through matplotlib

PredictaCare — GitHub
Machine Learning for Healthcare Optimization — *April 2024 – June 2024*
- Trained and built a machine learning model on patient demographics and appointment types data for optimizing medical scheduling through appointment duration predictions, reducing the wait time to increase the medical institute's operational efficiency
- Backed by SkLearn linear regression, a Docker container, a Node/Express server, HTML/JS frontend, and a Python model (NLTK, TF-IDF)
- Showcased with two peers at Drexel's 11th annual Philly Codefest "Leveraging AI for the Common Good," amongst ∼30+ other teams

EXTRACURRICULARS

Swarthmore International Collegiate Programming Contest (ICPC) — Swarthmore, PA
Team Member — *Sept. 2024 – Present*
- Solved complex algorithmic problems in high-pressure team environments, enhancing skills for regional and global competitions
- Placed 5th at ICPC's 2024 NA South Division 2 competition at Wilkes University, solving algorithmic problems under strict time pressure

Swarthmore College Computer Society (SCCS) — Swarthmore, PA
Member & Project Lead — *Feb. 2024 – Present*
- Maintained servers and developed software collaborating with ∼60 members to support the community as Swat Swap project lead