Eli Young

eliyoung4now@gmail.com | LinkedIn | GitHub | Portfolio

Education

Swarthmore College — Swarthmore, PA
B.A. in Computer Science, cumulative GPA 3.2 of 4.0 including study abroad credit, major GPA 3.5 of 4.0 — *Sept. 2022 to May 2026*

Coursework: Algorithms, Compilers, Computer Systems, Databases, Machine Learning, Computational Analysis of Big Data, Discrete Math, Linear Algebra, Statistical Methods

DIS Study Abroad — Copenhagen, Denmark
Game development, big data analysis, and applied generative AI — *Jan. to May 2025*

Publications and Manuscripts

Luu, A., **Young, E.**, & Wehar, M. (2026). Supporting Active Learning in Computer Science with Live, Gamified Classroom Quizzes. *40th Annual Consortium for Computing Sciences in Colleges: Southeastern Conference (CCSC:SE)*. To appear in the *Journal of Computing Sciences in Colleges* and the ACM Digital Library. — *Accepted*

Young, E., Luu, A., & Wehar, M. (2026). A Competency Framework for Assessing AI-Assisted Programming Work. *SIGCSE Virtual 2026* (poster). To appear in the ACM Digital Library. — *Accepted*

Luu, A., **Young, E.**, & Wehar, M. (2026). Teaching Vibecoding: An Open Curriculum for AI-Assisted Software Development. *SIGCSE Virtual 2026* (poster). To appear in the ACM Digital Library. — *Accepted*

Young, E., Ahmed, M. W., Emmert, J. L., & Kamruzzaman, M. (2026). Simulating progressive early removal of chicken eggs using sex and viability prediction with hyperspectral imaging and machine learning. Target: *Food Control*. — *In prep.*

Vibecoding: Introduction to Applied AI, with A. Luu and M. Wehar. Open textbook, to be published under CC BY-NC on completion. — *In progress*

Research Experience

Swarthmore College, Applied Machine Learning Researcher — Swarthmore, PA
Advisor: Prof. Gabriel Hope. With USDA ARS, Auburn University, and Harvey Mudd College — *Sept. 2025 to May 2026*

- Classified insect feeding behavior from electrical penetration graph (EPG) signals, raising mosquito macro-F1 from roughly 0.43 to above 0.54 with windowed FFT and wavelet features, SMOTE rebalancing, and tuned random forests, and reaching roughly 0.78 weighted-F1 on sharpshooter data with combined labels.
- Benchmarked random forests against gradient boosting and U-Net/U-Net-CRF segmentation with post-processing. Built reproducible SLURM pipelines using Hydra configuration and Weights & Biases logging.
- Built diagnostics to support labeling: visualizations comparing ground truth and predicted sequences, per-class evaluation summaries, and augmentation tooling for an open source entomology toolkit.

Center for Digital Agriculture, University of Illinois Urbana-Champaign — Urbana-Champaign, IL
NSF REU Fellow. PI: Prof. Mohammed Kamruzzaman — *May to Aug. 2025*

- Built ML pipelines on transmittance hyperspectral imaging for non-destructive prediction of chick sex and egg viability across Days 0 to 4 of incubation, on 551 sex-labeled and 664 viability-labeled eggs.
- Designed a progressive-removal simulation mirroring real hatchery screening, with model fitting kept inside the validation folds to prevent leakage. Showed that precision falls into the roughly 47 to 53% range on unseen imaging sessions, and that subtracting each session median recovers viability precision to about 90% at 58% recall.
- Reached 93.8% Day-4 viability accuracy and 91% balanced accuracy, with a threshold rule flagging non-viable eggs at 93.1% precision and 79% recall. Sex prediction reached only 59.9%, reported as a boundary on the early window.
- Continued the analysis after the fellowship ended and was invited by the PI to write the resulting manuscript as first author. Presented a poster and Science Slam talk at the 2025 STEM Career Exploration and Symposium.

Research Platform and Software

AlgoArena, LLC | **algoarena.net** Remote

Co-Founder & CEO *Sept. 2025 to Present*

- Lead sales, customer discovery, product, and fundraising, and write a large share of the code, especially for the agentic assessment environment behind the competency framework paper. Candidates build software there with a model in the loop, and every prompt, edit, test run, and verification step is captured as a replayable trace for research and scoring.
- About 1,200 registered accounts, more than 9,400 practice problems across 17 languages, and over 1,100 completed matches. Classroom Mode, the live quiz system from the CCSC:SE paper, runs sessions led by instructors.
- Piloted in Prof. Michael Wehar's Competitive Coding Algorithms course (CS283) at Bryn Mawr College, where a Digital Bryn Mawr grant paid for 11 student seats, our first institutional sale. Between April and October 2026, eleven hosts with no tie to the project ran fifteen live quizzes with students of their own.

CityPulse

Real-time public-safety mapping from live police radio via an LLM pipeline *Apr. to July 2026*

- Ingested and transcribed public police-radio audio, extracted incident type, severity, and geocoded location with an LLM pipeline, and supported routing that avoided user-selected live incident types. Ran in four cities until July 2026. Originated at Drexel's Philly Codefest 2026.

GameCombiner | **gamecombiner.com** **Lock In** | **trylockin.com**

Embedding space game retrieval and a cross platform productivity app with native app blocking *2024 to Present*

- GameCombiner: midpoint search over roughly 140k games with candidate shortlisting and scoring guards for deterministic global recipes (Python, FastAPI, sentence-transformer embeddings, Firestore, Cloud Run). Lock In: React Native with native Kotlin/Swift modules, Firebase sync, and in-app purchases, shipped to both app stores.

Industry Experience

myOrbit Remote

Contract Software Engineer *June 2025 to Present*

- Resolved a production API rate-limiting bottleneck, cutting client calls roughly 75%, from 60 per minute to between 10 and 15, via debouncing and caching. Extended the platform with AWS EC2, Lambda, and SES for notification and moderation flows against a legacy schema.

Torchman I.P. Remote

Software Engineering Intern *Sept. 2024 to Apr. 2025*

- Built a complete USPTO office action pipeline and packaged it as a Windows executable for legal staff without technical backgrounds. The pipeline handled Tesseract OCR, regex field extraction, classification of final and non final actions, automatic deadline computation, and Selenium reference retrieval.

Awards and Fellowships

1517 Fund Medici Project Grantee, a no-strings grant for student builders (Feb. 2026).

NSF REU Fellowship, Center for Digital Agriculture, UIUC (May 2025).

Winner, Livestock Monitoring Track, AI Foundry for Ag Applications Hackathon (June 2025), for YOLO-based pig weight estimation (under 5 kg MAE) on 9,579 labeled images with automated feeding control.

Teaching and Service

CS Student Mentor, Swarthmore College (Oct. to Dec. 2024), selected to mentor students in CPSC 31 and CPSC 35. **Founder**, Savvy Seniors Tech Institute (2023 to present), weekly instruction for adults over 55 and office hours open to more than 300 residents at Ascension Living. **Founder & President**, Swarthmore Magic: The Gathering Club (2023 to 2026), member of SCCS, and **ICPC team member** for Swarthmore at the Mid-Atlantic Regional (2024).

Technical Skills

Languages: Python, C++, JavaScript/TypeScript, Java, C, C#, SQL, R, Bash, Swift, Kotlin, OCaml

ML & Research: PyTorch, scikit-learn, TensorFlow, Optuna, Hydra, Weights & Biases, SLURM, NumPy/Pandas

Systems: React, Next.js, Node.js, React Native, Flask, FastAPI, Docker, AWS (EC2, Lambda, SES), Firebase, PostgreSQL, CI/CD, Playwright, Selenium