

Tessa Everett

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EDUCATION

Massachusetts Institute of Technology (est. graduation May 2026)

Candidate for a B.S. in Artificial Intelligence and Decision-Making

Computing Coursework: Design and Analysis of Algorithms • Computer Vision • Signal Processing • Introduction to Machine Learning • Introduction to Inference • Fundamentals of Programming • Math for Computer Science

Biology Coursework: Generative AI in Biology • Biochemistry • Organic Chemistry • Thermodynamics of Biomolecular Systems • Making for Biological Engineer

WORK EXPERIENCE

Engineering Intern – Computer Vision and Data Science (June 2025–Present)

Syght, Boulder, CO (On-site)

- Training object detection models (YOLOv11, RT-DETR) optimized for real-time accuracy in diverse environments.
- Tracking and analyzing metrics such as mAP (50–95), precision, and recall to guide iterative improvements
- Engineering custom data augmentation and sampling pipelines to address rare-class imbalance.
- Collaborating with engineering and product teams to integrate models into company products.

Software Engineering Intern - Artificial Intelligence (May 2024–September 2024)

SeeScan, San Diego, CA (Remote)

- Developed the team's primary computer vision dataset creation pipeline using Python, implementing techniques to address class imbalance.
- Studied and adjusted hyperparameters on YOLO models, optimizing for small object detection and trained on AWS.

Protein Engineering Intern (June 2023–July 2023)

Centre for Biotechnology and Bioengineering, Santiago, Chile (On-Site)

- Purified target proteins using liquid chromatography and conducted Bradford assays to assess protein functionality.
- Monitored and optimized batch-fed *Pichia pastoris* yeast cultivation for improved protein production.

Electronics and Neurobiology Lab Undergraduate Researcher (December 2022–May 2023)

Bioelectronics Lab at MIT, (Cambridge, MA)

- Executed immunohistochemical staining, tissue preparation, slide mounts, confocal microscopy, and image analysis; enhancing the lab's ability to understand the gut-brain axis in the SHANK3B Autism Spectrum Disorder mouse model

TECHNICAL PROJECTS & COMPETITIONS

Inference-Time Scaling for 3D Diffusion Models – Research Project (Spring 2025)

- Proposed and implemented a dynamic inference-time scaling algorithm combining adaptive Best-of-N sampling and a multimodal LLM verifier to enhance 3D diffusion model performance.
- Designed and executed an experiment on the Objaverse-XL dataset, demonstrating statistically significant improvements across perceptual fidelity metrics (PSNR ↑1.647, LPIPS ↓0.0855, SSIM ↑0.0283, FS ↑0.0187).
- Built custom evaluation pipelines using ICP alignment and 2D view synthesis; wrote statistical testing suite (Shapiro-Wilk, t-test, Wilcoxon) to validate gains.
- Achieved visual and numerical fidelity gains rivaling recent architectural improvements, with zero retraining overhead.

Spatial Transcriptomics Disease Prediction Challenge - Biomedical ML Competition (January 2025)

- Developed a deep learning pipeline (ResNet50 + MLP) for disease classification using spatial transcriptomics images and gene expression data
- Engineered efficient data processing workflows with Dask, SpatialData, and anndata, enabling scalable preprocessing
- Ranked 30th globally in a competitive biomedical ML challenge hosted by CrunchLabs.

SKILLS

Programming: Python, Pandas, NumPy, Scikit-learn, OpenCV, Matplotlib, PyTorch, Dask, JSON, CSV, Open3D

Machine Learning: YOLO, RT-DETR, CNNs, MLPs, diffusion models, Object Detection, LLM Evaluation

Data Science: Statistical Testing, Metric Analysis, Experimental Design, Anndata, Spatial Data, DVC

EXTRACURRICULARS

Alpha Delta Phi Literature Society (September 2022–Present)

- Executive board member, managing up to 50+ residents and \$400,000 annual revenue.

Varsity Track and Cross Country Athlete (August 2022–Present)

- Dedicated member of MIT's Varsity Track and Cross Country teams, earning NEWMAC athlete of the week in 2022