

Jonathan Allen

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EDUCATION

University of Massachusetts Boston

Bachelor of Science, Computer Science and Mathematics (minor)

Boston, MA

Sept 2025 — May 2027

- GPA: 4.0, Dean's List
- Relevant Coursework: Advanced Algorithms, Linear Algebra, Discrete Mathematics, Theory of Computation, Computer Architecture

WORK EXPERIENCE

ML Research Practicum

Jan 2026 — May 2026

Venture Development Center

Boston, MA

- Selected via competitive examination for a 16-week ML research practicum delivering production segmentation models for biotech startups
- Fine-tuned Cellpose-SAM on phase-contrast microscopy for Entocellular (biotech startup) cell segmentation (AP at IoU 0.5 of 0.624), and built a Napari annotation tool with model-assisted pre-labeling to accelerate dataset curation
- Built PyTorch training and evaluation pipelines with TensorBoard logging, Dice/IoU metrics, and per-image overlay diagnostics

Founder / Lead Web Developer

Jan 2026 — Present

Bestella Web Design

Remote

- Founded web design company delivering high-performance, SEO-optimized websites for service-based businesses
- Developed static sites in Eleventy/JS/HTML/CSS with structured data, local SEO, and mobile-first responsive design
- Managed full client lifecycle through Netlify CI/CD, achieving 90+ PageSpeed scores and growing one client's inbound contacts from 0 to 12+ per month post-launch

PROJECTS

Developer, Foundation Model Fine-Tuning for Medical Segmentation (INIA Bioscience)

- Built a unified Python package around Meta's SAM 3 and MedSAM 3 for spleen ultrasound segmentation, exposing both backbones through one inference and fine-tuning API
- Fine-tuned MedSAM 3 via LoRA adapters and SAM 3 via mask-decoder unfreezing, chaining SAM 3 with a UNet++ to auto-generate bounding-box prompts
- Raised mean Dice from 0.62 to 0.97 on the held-out val split, bringing Dice > 0.5 coverage from 34/42 to 42/42

Developer, C-Grad: Autograd Engine in C

- Built a scalar-valued autograd engine in C with forward/backward passes over a dynamic compute graph and topological-sort backpropagation (add, mul, ReLU)
- Designed a custom arena allocator for graph-node memory management and built an MLP module on top of the engine to train on real datasets

Developer, Chess Engine

- Built a Python chess engine and Lichess bot (1600 Elo) using iterative-deepening minimax with alpha-beta pruning, quiescence search, transposition tables, null-move pruning, and late move reductions
- Implemented phase-blended piece-square evaluation with mobility, king safety, bishop pair, and pawn structure terms, plus MVV-LVA ordering, killer moves, and history heuristic
- Shipped a UCI driver with time management and a Netlify-hosted live stats dashboard tracking rated games

SKILLS

- **Programming Languages:** Python, C/C++, Java, JavaScript, Typescript, SQL, Bash/Zsh, HTML/CSS
- **Technologies:** PyTorch, NumPy, Pandas, Scikit-learn, Hugging Face, Claude Code, Linux, Git, FastAPI, React, Jupyter, REST APIs, SDL3/SDL2, 11ty, Netlify, NVIDIA DGX H200
- **Skills:** Machine Learning, Deep Learning, Computer Vision, Image Segmentation, Data Pipelines, Systems Programming, Data Structures & Algorithms, CI/CD, Unit Testing