Tailai Ying

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Education

College of Engineering, Cornell University — Ithaca, NY
B.S. in Computer Science — *Expected May 2027*

Coursework

Data Structures and Algorithms, Machine Learning, Functional Programming, Analysis of Algorithms, Discrete Structures, Probability Models and Inference, Linear Algebra, Digital Logic and Computer Organization, Robotics, Database Systems

Technical Skills

Languages: Python, Java, JavaScript, TypeScript, SQL, OCaml, HTML/CSS, XML
ML/Robotics: PyTorch, NumPy, scikit-learn, Matplotlib, Pandas, Wandb, MuJoCo, PyBullet, Gymnasium, ROS, OpenCV
Web: React, Next.js, Node.js, Flask, Spring Boot, Tailwind CSS, PostgreSQL, SQLite, Prisma
Tools: Docker, Git, GitHub Actions, Linux/Ubuntu, SLURM, Figma, Postman, Hydra

Experience

Research Assistant — May 2025 – Present
EmPRISE Lab — *Ithaca, NY*
- Designed active learning based robot initialization framework with continuous optimization for adaptive reachability test selection, and a variational inference architecture to infer patient functionality from variable-length test histories
- Scaled open source musculoskeletal simulation suite (MyoSuite) into high-throughput reinforcement learning research platform by adding a new reachability policy, CLI/YAML interfaces, and automated data logging with Wandb
- Integrated Hydra parallelization with platform, boosting experiment throughput by over 5× on Cornell's HPC cluster

Machine Learning Intern — May 2025 – Aug 2025
Aria Lab — *Salt Lake City, UT*
- Built 3D swarm simulation in PyBullet, with configurable multi-agent controllers and automated data analysis
- Integrated novelty search and clustering with platform to discover and classify over 10 previously unknown swarm behaviors

Technical Lead — Jan 2025 – Aug 2025
CommuniCare — *Ithaca, NY*
- Spearheaded frontend development of React app for startup connecting underserved communities to healthcare resources
- Managed 8-member team, implementing Agile workflows and CI/CD pipeline automation to cut release cycle time by 50%
- Collaborated with business team and clients, raising over $32,000 and securing hospital partnerships across greater NY

Software Engineer — Feb 2024 – Present
Cornell Autonomous Drone — *Ithaca, NY*
- Implemented stereo-vision depth estimation and YOLOv10 detection to boost target-localization accuracy by over 30%

Projects

CritterEvo - Presented @ Cornell BOOM 2025 | *Java* — Dec 2024 – Feb 2025
- Built ecosystem simulator with evolving entities on a procedurally generated cell world, demonstrating natural selection
- Implemented custom AI using multi-layer perceptron controllers with NEAT-based evolution and A* pathfinding engine, enabling agents to navigate complex terrain and develop emergent survival strategies
- Achieved over 80% performance improvement through multithreading, lazy loading and caching optimizations
- Achieved 95% test coverage with comprehensive JUnit suite, ensuring robust functionality across edge cases

Ear Trainer v1 & v2 | *Next.js, Spring Boot, VexFlow, Tone.js, PostgreSQL* — Jun 2025 – Aug 2025
- Developed full-stack music learning app with Next.js and PostgreSQL featuring dynamic aural exercise generation, real-time music notation rendering, and progress tracking across 10 skill levels
- Migrated v1 backend to scalable Spring Boot service, enabling faster feature expansion and improving API latency by 30%

Lockd - BigRed//Hacks Finalist and Beginner's Prize | *React Native, Flask* — Oct 2024
- Built IoT smart lock system with React Native, Flask, and Raspberry Pi, featuring vibration/sound anomaly detection with under 200 ms alert latency, and real-time push and email notifications
- Selected as Finalist (top 5 teams) and won Beginner's Prize (best project from first-time hackers) from over 40 teams and 135 competitors

Memories/Birthday App | *React, Flask, SQLite, Docker* — Nov 2025
- Developed full-stack memories app with real-time memory organization and timeline navigation, supporting over 500 images
- Built responsive React frontend with image/video rendering and implemented performant Flask + SQLite backend
- Implemented containerized CI/CD pipeline (Docker + Fly.io + Netlify), cutting deployment friction by 70%