

# Tailai Ying

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## EDUCATION

### College of Engineering, Cornell University

B.S. in Computer Science, GPA: 3.5

Ithaca, NY

Aug. 2023 – May 2027

## COURSEWORK

Intro CS: Design and Development, Object-Oriented Programming and Data Structures, Discrete Structures, Probability Models and Inference, Linear Algebra, Analysis of Algorithms, Data Structures and Functional Programming, Digital Logic and Computer Organization

## EXPERIENCE

### Technical Lead

Jan. 2025 – Present

*CommuniCare*

*Ithaca, NY*

- Developed full-stack web application with React, Express, and Firebase as technical lead, connecting underserved communities to healthcare resources
- Spearheaded the end-to-end software development lifecycle, including system design, feature implementation, and quality assurance testing
- Implemented Agile methods with weekly sprints and meetings, enhancing collaboration and team productivity by 25%
- Mentored team in software development best practices and system design to maintain codebase integrity and scalability
- Collaborated with designers and stakeholders to define technical specifications and ensure alignment with user needs

### CS Subteam Member

Feb. 2024 – Present

*Cornell Autonomous Drone*

*Ithaca, NY*

- Processed and labeled over 2GB of image data to optimize datasets for supervised learning and computer vision algorithms
- Utilized the YOLOv10 model to engineer a real-time object detection system, reducing latency by 46%
- Implemented mono and stereo camera based visual odometry algorithms, including distance and angle calculations for motion tracking, enhancing localization precision for autonomous drone navigation
- Automated data preparation and training with Python scripting, reducing manual processing time by more than 50%

## PROJECTS

### CritterEvo | *Java*

Dec. 2024 – Present

- Built an artificial life simulator with genetic inheritance and mutation to simulate natural selection and evolution
- Developed a procedurally generated terrain system using Simplex Noise for environmental realism and diversity
- Improved pathfinding with the A\* search algorithm, enabling critters to navigate obstacles and locate resources efficiently
- Implemented a neural network from scratch for high level decision-making, integrating the NEAT genetic algorithm to dynamically evolve critter intelligence for emergent behavior
- Emphasized clean, maintainable, and modular code with a focus on system design and effective class relationships
- Designed robust and comprehensive JUnit black and glass-box test suites to validate functionality and maintain consistency across edge cases
- Optimized application performance with multithreading, achieving up to 80% faster execution time by utilizing all CPU cores effectively

### Lockd: BigRed Smart Lock | *React Native, Flask, Typescript, Python*

Oct. 2024

- Finished as Finalists and won Beginners Prize out of 41 teams and 140+ competitors for BigRed//Hacks
- Assembled a smart lock system, integrating React with Flask APIs to create a companion mobile app, enabling remote control and break-in detection
- Configured Raspberry Pi shock and sound sensors for intrusion detection, triggering push and email notifications upon suspicious activity
- Built and implemented RESTful APIs for lock automation and control, improving user experience and lock response time

### Ear Training App | *Next.js, Prisma, PostgreSQL, TailwindCSS, Figma, Typescript*

Jul. 2024 – Sep. 2024

- Developed a full-stack Next.js web application for ear training, using VexFlow and Tone.js to display and play interactive music exercises
- Integrated PostgreSQL with Prisma ORM for efficient relational data management and user progress tracking
- Secured platform with user authentication and authorization mechanisms using Lucia, ensuring data privacy compliance
- Created seeding scripts to generate and populate the database with aural exercises aligning with the 2022 RCM Piano Syllabus

## TECHNICAL SKILLS

**Languages:** Java, Python, SQL, JavaScript, Typescript, HTML/CSS

**Frameworks and Libraries:** React, Flask, Express, Next.js, Bootstrap, TailwindCSS, Prisma, TensorFlow, OpenCV

**Technologies and Tools:** Git, Figma, Postman, PostgreSQL, Firebase