Tailai Ying

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EDUCATION

College of Engineering, Cornell University   Ithaca, NY
B.S. in Computer Science   *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

TECHNICAL SKILLS

Languages: Java, C++, Python, SQL, JavaScript, Typescript, HTML/CSS, OCaml, Verilog
Frameworks and Libraries: React, Flask, Express, Next.js, Bootstrap, TailwindCSS, Prisma, PyTorch, TensorFlow, OpenCV
Technologies and Tools: Git, Figma, Postman, PostgreSQL, Firebase

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 life cycle, including system design, feature implementation, and quality assurance testing
- Implemented Agile methods with weekly sprints and meetings, greatly enhancing collaboration and team productivity
- Conducted code reviews and mentored team in design/development best practices to maintain codebase integrity and scalability
- Collaborated with designers and stakeholders to define technical specifications and ensure alignment with user needs
- Implemented and configured GitHub Actions CI/CD pipeline, automating deployment processes and streamlining team workflow

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 machine learning model to engineer a real-time object detection system, reducing latency by 46%
- Implemented mono and stereo camera based visual odometry algorithms using PyTorch and OpenCV, 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 – Feb. 2025
- 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 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 dynamically generated, interactive music exercises
- Integrated PostgreSQL with Primsa ORM for efficient relational data management and user progress tracking
- Secured platform with user authentication and authorization mechanisms using Lucia, ensuring data privacy compliance