Xiyun Hu

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EDUCATION

University of North Carolina at Chapel Hill Expected May 2027
B.S. in Computer Science and Statistics
Minor in Information Systems

- ***Cumulative GPA:*** 3.82/4.0
- ***Honors***: UNC MAC Program, Honors Carolina Program, Dean's List

SKILLS

- ***Programming Skills:*** Python, Java, C, C-Sharp, TypeScript, R, HTML, CSS, JavaScript
- ***Frameworks and Tools:*** MERN stack, PyTorch, MySQL, MATLAB, Python Pandas, Linux, Unity, Blender
- ***Languages:*** Mandarin (Native), English (Working Proficiency), French (Conversational)

PROFESSIONAL EXPERIENCE

Becton, Dickinson, and Company | Research Triangle Park, NC May 2025 - Present
Software Engineer Intern

- Engineered a **Unity-based mixed reality application** to support user studies on healthcare products, enabling interactive simulations and immersive user testing
- Designed and implemented a **custom control panel UI** integrating multi-windows video feeds, enabling efficient monitoring and real-time configuration of test environments
- Migrated core **Virtual Training Modules** from **JavaScript** to **TypeScript**, enhancing code scalability and reliability across immersive training platforms
- Added **networking support** for real-time remote observation, enhancing collaborative testing workflows across distributed users, mirroring **online multiplayer synchronization principles**
- Identified and resolved 600+ bugs uncovered during the code base migration and optimization, strengthening code quality, testing coverage and maintainability

UNC School of Medicine | Chapel Hill, NC Sep 2024 - Jan 2025
Machine Learning Research Assistant

- Processed and cleaned 10,000+ **ECG biosignal tracings** using Python, applying **digital filtering**, **smoothing**, and dimensionality reduction techniques that improved **signal-to-noise ratio (SNR)** by 18 - 22 %
- Engineered temporal and morphological features that improved model robustness to noise, increasing classification accuracy from 78% - 86% on previously low-quality ECG datasets
- Developed a **variational autoencoder** in **PyTorch** that reduced reconstruction error by ~25%, enabling unsupervised feature extraction from high-dimensional temporal signals
- Conducted controlled experiments comparing filtering configurations, sampling rates, and ensemble models; presented findings to clinicians and engineering teams using visualizations (**Matplotlib**) and statistical summaries
- Implemented modular, maintainable Python code following **OOP design principles**, enabling faster experimentation and reproducibility for future research

PROJECT EXPERIENCE

Agentic AI Data Analysis Platform | React | TypeScript | Vite | FastAPI | WebSocket | LangGraph Sep 2025

- Designed and implemented the **front-end interface** for a large language model platform that enables agentic AI-driven data analysis, improving accuracy and reducing hallucinations in generated insights
- Built interactive components in **React + Typescript** and integrated real-time communication through **WebSocket APIs**, allowing dynamic collaboration between human users and AI-generated analysis plans
- Partnered with back-end engineers to design API connections with **FastAPI**, ensuring seamless data flow between planning agents, user inputs, and processing pipelines
- Focused on **human-AI collaboration UI/UX**, enabling user to modify, refine, and expand AI-generated analysis workflows for more reliable and scalable outcomes

CoachWell: Online Psychological Support Platform | MERN | Firebase | Discord API Jan 2025

- Designed and engineered interactive modules for CoachWell's digital coaching platform using React + Typescript, focusing on user flow and reducing interaction friction
- Constructed an **administrative dashboard** to centralize appointment coordination, resource allocation, and operational workflows, improving organizational efficiency by 30%
- Established a secure **multi-factor authentication** framework with role-based access controls for safe registration, login, and personalized appointment management
- Built modular, reusable UI components following OOP design principles, supporting faster prototyping and scalability