CHARLOTTE TSUI

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EDUCATION

The University of North Carolina at Chapel Hill | **B.S. in Computer Science & B.S. in Data Science** | **GPA: 3.7**
Relevant Courses: Data Structures, Algorithms and Analysis, Software Engineering, Modern Web Programming, Discrete Structures

TECHNICAL SKILLS

Programming Languages: Java, Python, Swift, C, JavaScript, TypeScript, HTML, CSS, SQL
Frameworks & Development Tools: React, Angular, Next.js, Git, GitHub, Docker, Vim, Tailwind, Firebase, Supabase, PostgreSQL, MongoDB, Unix/Linux, Kubernetes, Figma

PROFESSIONAL EXPERIENCE

SAS Data and AI Solutions | Software Engineer Intern — May 2025 - Present

- Developed a static code analysis tool with **JSCodeShift, TypeScript, and MongoDB**, processing 100K+ lines of code to extract usage metrics and guide large-scale React library modernization
- Automated **testing, linting, and security scans** within CI/CD pipelines (**GitHub Actions**, **YAML**), ensuring code quality and compliance across internal projects
- Engineered **scalable, reusable React components** with unit and E2E tests (**Jest, Playwright**), adopted by 20+ internal teams to reduce implementation errors and unify UX across platforms

Centible | iOS Mobile Developer — Jan 2025 - Present

- Launched a Swift-based finance tracker on the App Store with a 20-member **agile** startup team
- Implemented premium features with **Swift, StoreKit, and Swift Charts**, supporting a $5.5K+/yr monetization strategy
- Optimized **Firebase** queries and caching, reducing data retrieval latency and optimizing in-app metrics for 500+ users
- Leveraged secure **Plaid API** integration with token-based authentication, enabling real-time financial data syncing across iOS devices

UNC Department of Computer Science | Teaching Assistant — Jan 2024 - Present

- Supported 800+ Intro to Programming students through 1:1 tutoring, weekly office hours, and in-lecture assistance
- Taught **algorithms, recursion, OOP, and Git version control** and complex **Python** concepts to both CS and non-technical majors
- Worked alongside professors and 50+ teaching assistants, strategizing lesson plans and organizing a semesterly hackathon

PROJECTS

ByteNotes | CS Notetaking Website

- Engineered a scalable full-stack platform (**TypeScript, Next.js, Supabase, Tailwind**) featuring a markdown editor and integrated **StackBlitz** live compiler for interactive code execution
- Implemented user authentication, real-time presence tracking, and event-driven reactions, optimizing **Supabase** queries for low-latency collaboration and dynamic note creation
- Integrated shareable notebooks with persistent storage and efficient data retrieval, enhancing performance across devices

CampusNav | University Class Scheduler and Navigation App

- Developed a **Python** web scraper (**BeautifulSoup, Pandas**) to transform unstructured course data into structured **JSON**, applying parsing and data-cleaning algorithms
- Built a **Swift** + **MapKit app** to compute and visualize **optimal walking routes** between campus buildings using geospatial data
- Engineered schedule-saving and sharing features with **Firebase** for persistent, multi-device access

TA Office Hour Scheduler | AI-Powered Scheduling Web Platform for the CSXL

- Developed a full-stack scheduling system (**Angular**, **FastAPI**, and **PostgreSQL**) to automate TA office hour assignments via **OpenAI** integration, deployed using **CloudApps** with **CI/CD** pipelines for streamlined updates
- Implemented an interactive, grid-based availability interface with real-time feedback and JSON-based persistence for data handling
- Built instructor-facing tools and **RESTful API** endpoints, supporting dynamic schedule updates, and admin controls

She's Not Here | iOS Ride-Share App

- Built a **Swift** ride-share app using **Firebase and Stripe**, implementing secure scheduling and payment flows
- Debugged and optimized **CoreLocation** algorithms for accurate ride-matching, improving route efficiency and reliability