

Runkai Zhang

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EDUCATION

University of Washington - Seattle | Human Centered Design and Engineering | GPA: 3.80/4.0 Sept 2023 - Present

- Achieved **Dean's List** honors for **7 consecutive quarters** (Fall 2023 - Current), including two **4.0 GPA quarters** in Autumn 2024 and Autumn 2025

- Relevant Coursework: **Interactive Systems Design, Foundations of Human-Centered Design, Data Structures & Algorithms, Data Programming, Probability & Statistics**

Northfield Mount Hermon | High School Aug 2020 - June 2023

- Led the **NMH Robotics Team** as team captain, competing in **VEX Robotics competitions** throughout high school; managed team strategy, robot design, and **autonomous programming**

EXPERIENCE

AI Systems Engineer Intern | Northfield Mount Hermon, Gill, MA June 2025 - Aug 2025

- Architected and deployed a campus-wide **AI assistant** serving **600+ students and faculty**, featuring **real-time chat, Whisper STT, RAG pipelines, and image generation**

- Engineered a fully **open-source production stack** using **vLLM, llama.cpp, Docker Compose, and PostgreSQL**—eliminating vendor lock-in and reducing infrastructure costs

- Implemented **role-based access control** by patching **Open WebUI auth**, enabling context-appropriate AI responses for students, faculty, and administrative staff

Human-Computer Interaction Design Intern | Humanist LLC (Remote) June 2024 - Aug 2024

- Designed and prototyped an **iOS receipt scanning app** using **vLLM**, achieving **90%+ extraction accuracy** across varied receipt formats and lighting conditions

- Conducted **user research** with small business owners to identify pain points, informing **iterative design** decisions that reduced average capture-to-entry time to **under 5 seconds**

SELECTED PROJECTS

Bookkeeper: Receipt Manager May 2024 - April 2025

- Implemented **OCR pipelines** and **GPT-4 Vision API** integration in **Swift** to parse merchant names, line items, prices, and tax from unstructured receipt images with high accuracy

- Engineered **automatic expense categorization** across **10 predefined categories** using LLM-based classification, eliminating manual tagging for users

- Architected **multi-currency support** storing per-item currency metadata; built **SwiftUI** frontend with **Core Data** persistence and **CloudKit** sync using **MVVM architecture**

TeleCoach | telecoach.vercel.app April 2024 - Nov 2024

- Developed a **SvelteKit** web application with **TypeScript**, implementing client-side state management and **local storage encryption** for HIPAA-adjacent data handling

- Engineered **privacy-first data pipelines** processing all sensitive health data via **Web Crypto API** in-browser—achieving **zero server-side PII storage** for IRB compliance

Notable - Text Editor | github.com/runkaiz/Notable June 2023 - Present

- Built a custom **vector embedding search engine** using **sentence transformers** and **cosine similarity**; optimized for **1000+ notes** by caching embeddings in **SwiftData**

- Designed **pile-based organization** inspired by **Things 3** inbox philosophy, replacing rigid folder hierarchies with fluid, context-driven note grouping

- Implemented **Markdown syntax highlighting, .txt export, CloudKit sync, and FileProvider API** integration—achieving **500+ downloads** on the App Store

Shift-C | shiftc.app Sept 2022 - Nov 2022

- Developed **JavaScript** scheduling algorithms that generate personalized sleep-shift plans from user-input current and target wake times using **3 evidence-based chronotherapy strategies**

- Implemented **.ics calendar export** functionality, enabling users to import generated sleep schedules directly into **Apple Calendar, Google Calendar, and other apps**

The Bement School App | github.com/bement-dev/Bement-app Aug 2019 - April 2021

- Shipped a production **Swift/UIKit** app delivering library resources, lunch menus, and newsletters via **REST API** integration and **Firestore Cloud Messaging** push notifications

- Conducted **requirements gathering** through **stakeholder interviews** with school administration, parents, and students; navigated **App Store Connect** review and deployment independently

SKILLS

Languages & Frameworks: Python, Swift, SwiftUI, JavaScript, TypeScript, React, SvelteKit, Node.js, HTML/CSS, SQL

AI/ML & Infrastructure: vLLM, llama.cpp, LangChain, ChromaDB, RAG, Whisper, Core ML, OpenAI API, Docker, PostgreSQL, Firebase, CloudKit

Hardware & Systems: 5+ years 3D printing & printer building (FDM/resin), Proxmox/Unraid homelab administration, self-hosted infrastructure

Design & Research: User research, usability testing, prototyping, wireframing, information architecture, interaction design, Figma