Lionel Hu

Burlingame, CA | lionelhu33@gmail.com | GitHub | LinkedIn | Portfolio

Education

University of Pennsylvania 08/2023 – 05/2025
Master of Science in Engineering in Computer and Information Science - GPA: 3.90/4.0 Philadelphia, PA

Rice University 08/2019 – 05/2023
Bachelor of Arts in Computer Science Houston, TX

Skills

- **Programming & Software Design**: Python, Java, C, C++, SQL, Object-Oriented Programming, RESTful API
- **Web Dev**: HTML, JavaScript/TypeScript, CSS, React, Node.js, Express.js, Next.js, Tailwind, HeroUI, Figma, Vercel
- **Data**: Pandas, MongoDB, Firestore, MySQL, Oracle, Neo4j, AWS
- **Machine Learning & AI**: ChatGPT, LangChain, PyTorch, Groq, Prompt Engineering, MCP
- **Tools**: GitHub, LaTeX, Firebase, Azure DevOps Server, Jest, JUnit, Cypress

Experiences

HeartByte Inc | YC Startup for Gen-AI Interactive Story | San Mateo CA 06/2025 – present
Software Engineer

- Built a **Gen-AI interactive story web app** using **React, Next.js, and Firebase** serving **10K+ users** monthly.
- Designed and implemented a production-grade **branching visual-novel engine** enabling choice-driven narratives, manual and auto save/restore flows, and clean authoring experience, boosted playability for **1k+ stories**.
- Re-architected **10+ core pages** end-to-end with UI revamp, client-side-to-server-side rendering migration, API/data fetching redesign, and database schema redesign, improved usability, efficiency, and **core web vitals by 20%**.
- Designed a **numeric stats system** personal to each user within each novel for branching logic that enables conditional branching and conditional novel endings, enabling authors to personalize their stories creatively.
- Shipped an **LLM story-generation pipeline** (**Groq** + **prompt engineering**) with few-shot examples and JSON schema validation/repair for hallucination prevention; integrated into a multi-step story authoring flow.

HeartByte Inc | San Francisco CA (Remote) 05/2024 – 08/2024; 01/2025 – 05/2025
Software Engineer Intern

- Spearheaded comprehensive **Search Engine Optimization (SEO)** initiatives, including structured metadata, improved site performance, and keyword targeting, to enhance online visibility and **increase organic traffic by 5X**.
- Developed **10+ full-stack features** including story recommendation using **TypeScript, React.js, Firebase and Next.js**, enhancing **product functionality** to improve user experience and boost product completeness.
- Streamlined and standardized website UI of **15+ pages** by standardizing CSS and styling using **Tailwind CSS** and **NextUI components**, reducing design inconsistencies and accelerating the development process.

YelpScout | University of Pennsylvania, Philadelphia PA 01/2024 – 05/2024
Software Engineer

- Engineered a **local business search & insights web app** using **React, Node/Express, and MySQL** with advanced search filters, single-business analytics pages, and personalized recommendations in a 4-person team.
- Designed and implemented the **single-business analytics page** for 150K+ businesses with weekday popularity, ratings, reservation flag, and customer review keyword extraction powered by **RAKE-NLTK** preprocessing.
- Optimized performance via indexes and cached/intermediate tables, reducing heavy queries **from minutes to 1–3s**.

DocSearch | University of Pennsylvania, Philadelphia PA 09/2023 – 12/2023
Software Engineer

- Built an **end-to-end search engine** (crawler, distributed KVS, indexer, ranking, web UI, EC2) in a 4-person team.
- Implemented a robust and efficient **distributed key-value store** in **Java** with **concurrent processing** and **stream-put** to store crawl/index/PageRank tables; crawled **400K+ pages** and stored information in the KVS.
- Engineered the pipeline, including crawling, precomputed **TF-IDF** + **PageRank**, ranking, and web deployment.
- Implemented **crawl frontier policies**: allowlist-based token filtering with title-term expansion, depth/size guards and error filtering, and per-domain quotas to boost crawl efficiency and downstream relevance.