Vyom Thakkar

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Education

University of Illinois Urbana-Champaign **May 2022**
Master of Science in Electrical and Computer Engineering, GPA: 3.89/4.00 *Champaign, Illinois*

University of Illinois Urbana-Champaign **May 2020**
Bachelor of Science in Computer Engineering, GPA: 3.91/4.00 (High Honors) *Champaign, Illinois*

Experience

BlueSemi **August 2022 – Present**
Software Development Engineer *Hyderabad, India*

- Working as a founding software engineer, driving end-to-end responsibilities across Backend Development, Machine Learning, Signal Processing and Cloud Infrastructure
- Developed robust motion artifact detection and denoising algorithms by researching, implementing, and optimizing state-of-the-art digital signal processing techniques for Photoplethysmography (PPG) signals.
- Enhanced existing data pipelines through optimization and caching strategies; redesigned high-latency microservices, achieving a **53%** reduction in computation time.
- Led the development of an **LLM-powered health analyst agent**, enabling users to gain comprehensive insights and identify patterns within their health data, utilizing scalable and reliable agent-based frameworks and best practices.
- Led the development of a compute-intensive "Trends" feature, enabling users to analyze their data across multiple time scales; implemented a **time-interval based hashing datastructure** that sped up **API calls** to **tens of milliseconds** per request, bringing down **latency** by **400x**.
- Built a simulation environment enabling rapid backtesting of core algorithm changes against historical data, significantly accelerating analysis and validation of model improvements.
- Implemented server-side functionality of an **end-to-end D2C marketplace** (on app and website) that supports payments and automates logistics for order fulfillment.
- Built internal tooling/dashboards that allows cross-team synchronization and collaboration for order fulfillment and customer success

Noteboost (UIUC CSL in collaboration with Jump Simulation) **January 2021 – May 2022**
Software Developer *Champaign, Illinois, USA*

- Designed and developed an NLP-powered platform for Automated Short Answer Grading of medical chart notes, including a student-facing **React** frontend and a **Node.js** backend featuring user authentication.
- Automated **data collection & processing pipeline** for the NLP system, that reduced time-to-view grades by **10x**.
- Improved the **accuracy** of NLP model by **16%** by making use of **AWS Comprehend** for medical entity extraction and implementing **BioWordVec** clustering.
- The system has been **piloted with 5 cohorts** of medical students and presented during the International Meeting for Simulation in Healthcare in Los Angeles, Jan 2022.

Projects

Quanta: www.usequanta.ai | *Python, FastAPI, React, Node.js*

- Developed a custom, real-time data extraction pipeline capturing accurate market data for **2000+ tickers**, ensuring a maximum lag of **30** seconds from live market values.
- Developed an **LLM-driven analyst agent** that translated natural language queries into precise, data-backed insights using extracted market data.
- Demonstrated better performance on specific quantitative queries compared to existing LLM web-scraping-based search engines; however, faced limitations addressing broader analytical queries.
- Ultimately discontinued due to insufficient product-market fit for broader use cases.

GAN for synthetic chest X-Ray image generation in Covid-19 detection | *Python, Pytorch*

- Trained a Generative Adversarial Network to generate synthetic chest X-Ray images which improved Covid-19 **classification accuracy** on Convolution Neural Networks by **1%**. Click to view video link

Honors

- **National Finalist** at the **Indian National Linguistics Olympiad** (2015 and 2016)
- **Co-authored two research papers** accepted at prestigious conferences: **ACL** (a leading venue for AI/NLP research) and **LAK** (a top conference for AI in Education)