Hannah Sun

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EDUCATION

University of Michigan, College of Literature, Science and the Arts   **Ann Arbor, MI**
BS in Data Science, Minor: Mathematics, GPA: 3.74/4   Expected Apr 2025
Coursework: Math (Financial Assets, Continuous Time Models, Calculus, Matrices, Discrete Math, Probability, Differential Equations, Statistics, Regression); Data Science (Computation Theory, Machine Learning, Data Mining, Simulation in C++)

SKILLS

Programming and Markup Languages: C++/C, Python, Java, R, SQL, Bash, HTML, CSS, JavaScript, TypeScript, XML
Frameworks: Git, Linux, MongoDB, PostgreSQL, SQLite, React, Flask, NumPy, Pandas, PyTorch, LangChain, AutoGen

PROFESSIONAL EXPERIENCE

ProQuest LLC, University of Michigan College of Engineering   **Ann Arbor, MI**
Capstone Project Internship Student Developer   Jan 2024 - Present
- Automated newspaper article segmentation to enhance database query results in a team of six students and three mentors
- Prompted GPT-4o with base64-encoded newspaper images and cleaned OCR XML data to classify titles and body text
- Optimized LLM prompt to achieve 87.6% precision and 85.5% recall on titles across 41 front pages in the past century
- Adjusted binarized image pixel coverage threshold based on decade to detect dark regions, identifying photo artifacts
- Integrated heuristic and semantic artifact detection into pipeline, increasing recall by 21% from GMM-based model

Pachira Information Technology (Hengqin) Co., Ltd   **Hengqin, CN**
NLP Algorithm Intern   May 2024 - Aug 2024
- Worked with Toyota Motor Corporation to develop a smart in-car Q&A system set to launch in late 2025
- Developed new function to answer queries related to warning lights and deployed system iterations for simulator testing
- Engineered LangChain prompt to handle response refusal, multi-intent recognition, and context-based query translation
- Implemented batch processing to optimize web page embedding speed below 5 seconds during the RAG process

University of Michigan Math Department   **Ann Arbor, MI**
Undergraduate Math Lab Tutor   Sep 2023 - Dec 2023
- Tutored over 100 students in multivariable calculus, differential equations, matrix algebra, geometry, and probability
- Conducted 1-on-1 and group exam review sessions with a concentration in practice problems and challenging concepts

Bank of China Macau Branch   **Macao, CN**
Information Technology Academic Exchange   May 2023 - Jul 2023
- Organized customer relation and remittance data in a team of 3 to support the 2023 Due Diligence Reporting Project
- Extracted primary key combinations to structure SQL tables detailing transaction records within the past year
- Optimized query to retrieve 100,000 customer relation and 1 month of global remittance entries in under 30 seconds

PROJECT EXPERIENCE

University of Michigan EECS 484 Course Project   **Ann Arbor, MI**
Fakebook Database   Sep 2024 – Present
- Developed SQL database schema for fictional social media platform with key entities Users, Messages, Photos, and Events
- Maintained data integrity with foreign keys, triggers, and sequences, and tested database in the SQL*Linux environment
- Utilized JDBC to implement SQL queries in Java, extracting user birth month, name statistics, and mutual friends
- Executed sorting, grouping, and nested subqueries, optimizing average runtime to 0.075 seconds across nine tasks
- Implemented MongoDB aggregation pipelines to create Fakebook monthly engagement and activity reports

PothoAI   **Jersey City, NJ (Remote)**
Back End Developer   Jun 2024 – Sep 2024
- Built the backend of a chatbot platform leveraging the AutoGen framework to integrate LLMs, tools, and human input
- Implemented SQLite database operations to manage user sessions and message history for efficient data retrieval
- Customized sequential and autonomous agent workflow to answer input queries individually or in a group chat setting
- Used React and Nango to store Slack workspace contacts and build a mass messaging bot, deployed testing in Docker

MobiDrop (Zhejiang) Co., Ltd.   **Shanghai, CN (Remote)**
Single-cell Large Language Model   Nov 2023 - May 2024
- Constructed a pre-training step in scGPT, a Transformer-based model used for single-cell gene expression level prediction
- Sampled 300,000 human blood cells from CELLxGENE, preserving all cells from each randomly chosen organism ID
- Preprocessed the sample by filtering, normalizing, discretely binning, and tokenizing highly variable genes
- Logged training progress, achieving a 54% reduction in training and 6% decrease in validation error after 6 epochs