Ashwini Ainchwar

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Education

University of Southern California	Aug 2022 - May 2024
Master of Science in Computer Science; GPA: **3.83/4**	*Los Angeles, USA*
Visvesvaraya National Institute of Technology	Aug 2014 - May 2018
Bachelor of Technology, Computer Science and Engineering; GPA: **9.35/10**	*Nagpur, India*

Selected Coursework: Database Systems, Operating Systems, Distributed Systems, Information Retrieval, Machine Learning for Databases, Natural Language Processing, Machine Learning for Data Science, Analysis of Algorithms

Experience

C3.ai — Nov 2024 - Present
Software Engineer
- **BETTER Efficiency**: Developed data pipelines, back-end services, and UI pages to deliver actionable energy efficiency insights, allowing cost savings of **up to $1M annually** using **piecewise linear regression, z-score** and **rule-based recommendations**.
- **IFPSM**: Implemented **MapReduce and batch jobs** to extract granular consumption insights from raw energy usage data, enabling strategic planning and saving **approx $700k** by mitigating regulatory risk.

InfoLab - University of Southern California — Mar 2024 - Oct 2024
Machine Learning Engineer
- **Aster**: Leveraging space-efficient pre-trained models to generate column sketches of structured datasets for cardinality estimation, this provides an **8x reduction in memory usage** over state-of-the-art without loss of estimation accuracy.
- **HAYSTAC** [IARPA research]: Analyzing **per second** spatio-temporal human activity **data of 10k people over a week** to generate activity and trajectories which can be hidden in the normal behavioral pattern.

JP Morgan Chase — Jul 2018 - Aug 2022
Software Engineer II
- **Delta Contact ETL:** Led design and implementation of a Java-based data aggregation and distribution system for employee data management. The system was used for survey distribution and improving the experience of around **350k employees** globally. The highly concurrent design of our implementation provided a **15x performance improvement** over the legacy system.
- **Experience Management**: Engineered and deployed a suite of microservices, integrating tools like Qualtrics, transforming survey management and operational data integration for enhanced product development. This application improved user experience across the firm, with adoption by **20+ product teams** to streamline processes and a **increase of 20% in customer satisfaction**.
- **Daily Health Check:** Developed robust and scalable services for global distribution of daily health surveys and adaptive notifications to employees amidst COVID-19. Performed a global roll-out in **2 months**, and **reduced deployment frequency by 30%**.
- **Product Roadmap Tool**: Developed data fetch jobs and REST APIs with Spring Boot, along with a React-based UI, enabling dynamic, customizable, and shareable product roadmaps from JIRA data. This innovation cut manual creation time and reduced data duplication, supporting **over 10 instances per roadmap**.

JP Morgan Chase — May 2017 - Jul 2017
Summer Intern
- **Financial Transaction Processing**: Built an in-house alternative to a proprietary debit / credit card transaction encoding system. This system reduced transaction processing times, increased flexibility during format changes, and saved licensing costs.

Select Projects

- **Equipment-Manual Q&A Agent**: Engineered an equipment-manual chatbot for field technicians: parsed PDF manuals, **chunked** text, generated **embeddings**, and stored them in a **vector DB**, then layered an advanced **RAG** stack (**hybrid search** + **query expansion** + **HyDE**) to deliver cited answers in seconds, cutting lookup time from minutes and enabling ingestion of tribal knowledge.
- **Purchase-Order Processing:** Built a full stack app that ingests PDF purchase orders, extracts all line items using **OCR**, automatically matches them with the manufacturer's product catalog using a vanilla **RAG pipeline** and outputs data ready for ERP upload. Replaced manual re-keying, slashing order-entry time while maintaining **90 %+ match accuracy**.
- **GenProm (Integrating LLMs and programming)**: Leveraged a tree of thought approach and search methods to enable the GPT model to navigate and refine its steps, achieving a **10% improvement** in solving cryptogram accuracy.
- **Sentiment Analysis**: Achieved **83% accuracy** in sentiment analysis of Amazon reviews through strategic application of NLP techniques and evaluation of vectorization methods (BoW, TF-IDF, Word2Vec) against various ML models (SVM, RNNs, LSTMs, GRUs).

Technical Skills

- **Languages:** Java, Python, C, C++, Scala, R, JavaScript
- **Libraries**: PyTorch, NumPy, Pandas, NLTK, Scikit-learn, OpenCv
- **Frameworks and tools:** Spring Boot, FastAPI, Django, Ruby on Rails, React, Streamlit, AWS, Cloud Foundry, MQs, RabbitMQ, Spark, SQL, MySQL, PostgreSQL, NoSQL, Tableau, Kafka, Splunk, Git, Jenkins, Maven, JUnit, OpenSearch, Grafana, CI/CD, Docker