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

InfoLab - University of Southern California Mar 2023 - Present
Graduate Research Assistant; Mentors: Prof. Cyrus Shahabi, Dr. John Krumm *Los Angeles, California*

- **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.
- **Aster** [short paper]: 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.

JP Morgan Chase & Co. Jul 2018 - Aug 2022
Associate, Software Engineer *Bangalore, India*

- **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 scalable and robust services for global distribution of daily health surveys and adaptive notifications to employees amidst COVID-19. Performed a global roll-out in under **2 months**, **reducing deployment frequency by 30%**.
- **Product Roadmap Tool**: Developed data fetch jobs and REST APIs with Spring Boot, 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 & Co. May 2017 - Jul 2017
Summer Intern *Mumbai, India*

- **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

- **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).
- **Time Series Classification**: Developed a multi-class classifier to classify human activities with an **accuracy of 93%**, leveraging statistical analysis and feature engineering, tuning hyperparameters, and addressing class imbalances with SMOTE.
- **Day 1 Onboarding**: Aggregated data from over **7+ sources** to create dashboards for the Leadership Team, identifying onboarding bottlenecks and increasing new joiners who began working on Day 1 by **25%**.
- **Traffic Surveillance System**: Developed a real-time algorithm to identify stopped vehicles, combining object detection and tracking for improved accuracy and speed. Trained a CNN for detection and Lucas-Kanade optical flow algorithm for tracking.

Technical Skills

- **Languages**: Java, Python, C, C++, Scala, R, JavaScript
- **Libraries**: PyTorch, NumPy, Pandas, NLTK, Scikit-learn
- **Frameworks**: Spring Boot, Angular, Django, Ruby on Rails
- **Misc**: AWS, Cloud Foundary, MQs, Hadoop, SQL, NoSQL, Tableau, Splunk, Git, Jenkins, Maven, JUnit

Leadership & Involvement

- Served as Course Producer for a Machine Learning course at USC, enriching academic experience and facilitating peer learning.
- Organized and participated in Diversity & Inclusion initiatives at JP Morgan, enhancing organizational culture.
- Lead a special interest group of 50+ people for Software Engineering at JP Morgan, promoting best practices and new tech adoption.