Sahasra Iyer

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Education

University of Massachusetts Amherst **Sep 2021 – May 2023 (Expected)**
College of Information and Computer Sciences, MS in Computer Science *GPA: 3.9/4.0*

Cummins College of Engineering for Women, Pune **Aug 2014 – May 2018**
Department of Information Technology, Bachelor's of Engineering in Information Technology *GPA: 3.82/4.0*

Professional Experience and Internship

NLP Engineer Intern - MassChallenge, UMass Amherst, MA **May 2022 – Aug 2022**

- Spearheaded the development of an application filter model using a proprietary dataset with over 100 attributes to predict a startup's success, resulting in an improved selection accuracy of 98% for the startup accelerator.
- Succesfully deployed a content-based recommendation system using MLLib and Apache PySpark to provide effective mentor-mentee matching for the startups registered.

Technology Analyst, Citicorp Services, Pune **Aug 2018 – Jul 2021**

- Successfully migrated a Commodities feed from PL/SQL to a more efficient Spark/Scala framework using the Agile methodology, resulting in the generation of risk numbers for trades executed on the day.
- Achieved a 97% reduction in error by developing a module to improve reliability in Volcker Exchange-Traded transactions, reducing trade price mismatches from 70,000 to 100 per day, and was awarded the Citi Gratitude Award for the same.
- Collaborated with cross-functional teams to identify and debug issues in booking the trades on Simpliciti Risk Engine.
- Implemented Spark's in-memory computing capabilities to optimize the Dynamic Distribution Engine (DDE) product processor, resulting in significant improvements in the efficiency and execution times of payment processing.

Technical Skills

Languages: Python, Scala, XML, R, C, C++, Java
Technologies/Frameworks: Spark, PySpark, Scikit-Learn, PyTorch, TensorFlow, MLflow, Pandas, Numpy, Hadoop, Matplotlib, Django, XGBoost, NLTK, spaCy, Tableau
DBMS, DevOps and Cloud: MySQL, Oracle DB, PostgreSQL, MongoDB, Hive, Cassandra, Domo, AWS, Docker, Git

Projects

Depth Map Detection using RGB Images **Jan 20223 - May 2023**

- Integrated ResNet with the Swin Transformer architecture to fine-tune a state-of-the-art monocular depth estimation model, resulting in an improved RMSE score of 1.18 for depth predictions.
- Designed the Skip Attention Module (SAM) in conjunction with ResNet to capture intricate local and global features, resulting in a slight improvement in the accuracy of depth predictions.

Retrosynthesis - Molecule Route Prediction, Graduate Researcher - IBM **Jan 2022 - May 2022**

- Developed and optimized transformer-based multi-step models for molecule synthesis route generation using artificial intelligence, resulting in a 18% efficiency improvement compared to traditional methods.
- Implemented a self-supervised transformer-based atom mapper to analyze over 50,000 synthesis routes, resulting in the identification of key areas for improvement and an increase in overall valid route prediction accuracy by 30%.

Analysis of CGM time series data **Jan 2022 - May 2022**

- Worked on CGM time-series data analysis to extract features via various methods like statistical analysis, Fourier & power transforms. Implemented and fine-tuned multiple classification (KNN, SVM, SGD, Logistic Regression) & supervised-clustering algorithms (K-Means, DBScan) to achieve 70% accuracy improving over the baseline of 60%.

Political bias mitigation using attribute transfer **Sep 2021 - Dec 2021**

- Explored and implemented systems for bias mitigation in political news articles using text attribute transfer based on paraphrasing models implemented through a pretrained GPT2 medium model.
- Experimented with Reverse Attention Networks and XLNet Classifiers for attribute and content disentanglement.
- Achieved an accuracy of 58.39% on the test dataset, with fluency rate of 97.7% and similiarity score of 90.07%.

Text Detection from an Image and Translation **Apr 2017 - May 2018**

- Developed a machine translation tool that recognizes Hindi text from an image and produces the corresponding English translation using the Viterbi algorithm, an extension of the Hidden Markov Model, which incorporated syntaxes and semantics of the English language to produce grammatically correct translations using NLTK library.
- Authored and published papers in international journals Springer and IEEE for the same.