Amanpreet Singh

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Education

- **Stony Brook University** — New York, U.S.A.
  Master of Science in Computer Science; GPA: 3.93 — *2019 – 2021*
  - **Courses**: Analysis of Algorithms, Data Science, Natural Language Processing
  - **Teaching Assistant**: CSE 214 - Data Structures
- **University of Mumbai** — Mumbai, India
  Bachelor of Engineering in Information Technology; First Class with Distinction (72.9%) — *2011 – 2015*
  - **Relevant Courses**: Data Structures and Algorithms, Artificial Intelligence, Discrete Mathematics

Projects

- **Toxic Online Comments**: Applied Deep learning and Transfer learning to identify Toxicity in Wikipedia comments. Evaluated and compared the performance of sequential and state-of-the-art BERT models on the task.
- **Chess Player Ratings**: A regression based model to predict the Elo rating of a player from the moves sequences.
- **Relationship Extraction**: A Bi-GRU model with Attention and dropout to evaluate its performance on the SemEval-2010 Task 8 dataset.
- **Sentence Vector Representations**: Implementation of Deep Averaging Network(DAN) and the Gated Recurrent Unit(GRU) Sequence models. The results are then evaluated on IMDB movie reviews for sentiment classification.
- **Skip-gram based Word2Vec**: Word2Vec implementation with analysis of cross entropy loss v/s noise contrastive estimation as the objective function. Evaluation is done on the semantic task of word analogies.
- **Physual(*Capstone*)**: A text to scene generation system to visualize Mechanics word problems based on StanfordCore NLP, Java 3D and Blender Models.
- **Natural Language Toolkit Misc.**: Miscellaneous projects including 'News Article Classifier' and 'Similar Document Clustering System' based on tf-idf and page rank algorithms..
- **Machine Learning**: 'Products Review Sentiments', 'Songs Recommendation', and 'Handwritten Digit Recognizer'.

Publication(s)

- **Visualization of Mechanics Problems based on Natural Language Processing**: Summarized the research efforts and results of the aforementioned Capstone Project. (*International Journal of Computer Applications - April,2015*)

Experience

- **J.P. Morgan Chase & Co.** — Mumbai, India
  Senior Application Developer — *Feb 2018 – Aug 2019*
  - **NLP Query Service**: An interactive system to resolve user queries that uses a model trained on the CRF classifier from StanfordCore NLP and returns the nearest possible solution from an existing knowledge base.
  - **Trader Analytics**: Implemented functionalities such as absolute and percent variation, market share and standard deviation of stock prices based on historic data to assist traders in making better decisions.
  - **Real-Time Pricing**: Developed a component which approximates market risk in real-time from live underlying prices; and publishes the results for consumption. It helped retire a legacy system thus saving the firm ∼$250k.

  Application Developer — *July 2015 – Jan 2018*
  - **Risk Management System**: Worked extensively on the core app used by traders for visualizing and hedging risk; 1. Optimized the Positions feed using LMax Disruptor, a low latency queue library for upto 20% faster processing. 2. Process startup time improvement by 50% through the use of concurrency and Spring annotations.
  - **Market Data Source**: Framework for validating the functionality of the critical market data publisher and reporting results using Java MXBeans and Apache POI. Reduced the manual testing effort by 90%.
  - **Quick-Deploy**: Streamlined the deployment, startup and health check of application modules in production.
  - **MongoDB High availability**: Mechanism to switch from replica set to standalone configuration on the fly in case of a data center failure. Ensured business continuity during critical failures and reduced operational risk.

Technical Skills

- **Languages**: Java, Python, Unix Shell Scripting, SQL, MATLAB
- **Frameworks**: Tensorflow, NumPy, Scikit-Learn, Pandas, Keras, Matplotlib, Spring, Swagger
- **Databases**: Sybase ASE, MongoDB, MySQL