Amanpreet Singh

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Education

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

Projects

- **Identifying Toxicity in Online Interactions (*Ongoing*)**: Apply neural models to identify toxicity in Wikipedia comments and further divide them into 6-sub class labels. Also try and identify any bias that might have crept in the data due to the turks who manually labelled the dataset.
- **Predict Chess Player Rating (*Ongoing*)**: Predict the Elo ratings of a player from the moves sequence data.
- **Skip-gram based Word2Vec Implementation**: 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.
- **Comparison of Sentence Representations using Sentiment Analysis**: Sentence representation generation using Deep Averaging Network(DAN) and the Gated Recurrent Unit(GRU) Sequence-Based models. The representations are then applied to IMDB movie reviews for sentiment classification and their performance analysed.
- **Arc Standard based Dependency Parser**: A Neural Network Dependency Parser based on a 2014 paper which uses word, POS-tag and label embeddings to create a dependency tree by applying arc-standard transitions.
- **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**: Miscellaneous projects including 'Inverted Index Builder' and 'News Article Classifier'.
- **Machine Learning**: 'Products Review Sentiment Analyser', 'Songs Recommender System', 'Handwritten Digit Recognizer' and 'Similar Document Clustering System' based on tf-idf and page rank algorithms.

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
  Associate (Senior Application Developer) — *Feb 2018 – Aug 2019*
  - **NLP based 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**: Statistical and analytical tools including absolute and percent price variation, market share and standard deviation of Stocks based on historic data to assist traders in making better decisions.
  - **Real-Time Pricing Solution**: Developed a component from scratch which approximates market risk in real-time using live prices and Taylor Series; and publishes the results onto a messaging interface. Test Driven Development and incremental build principle were used in development with frameworks such as JBehave, Spring and REST.

  Technology Analyst (Application Developer) — *July 2015 – Jan 2018*
  - **Risk Management System**: Core application used by Traders for visualizing and hedging risk:
    1. Optimized the Positions and Trades feeds processing using LMax Disruptor, a low latency queue library.
    2. Process startup time improvement by 50% through the use of concurrency and Spring Annotations.
  - **Market Data Source**: Developed a framework for validating an in-house process that publishes live market data
  - **Shell Scripting and Java SSH**: Shell scripts to streamline deployment and startup of applications on servers.
  - **MongoDB**: Proficient in setting up standalone/replica set instance, data manipulation and backup/restoration.

Technical Skills

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