Abhinav Shaw

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EDUCATION

University of Massachusetts Amherst	Amherst, MA
Master of Science in Computer Science, GPA: 3.67	*Sep 2017 – May 2019*

Coursework - Deep Learning, Machine Learning, Probability Theory

University of Mumbai	Mumbai
Bachelor in Computer Engineering, graduated with Distinction	*Aug 2011 – Jul 2015*

Coursework - Algorithms, OS, DBMS, Data Mining, OOP, Advance Networks

EXPERIENCE

Graduate Researcher, UMass Amherst - *Research, analytics*   *Jan 2018 – Present*

Advisor - *Prof. Andrew McCallum*

- Developing android app to collect vital signs data; applying different machine learning models such as Decision trees, Hidden Markov Models, Conditional Random Fields etc to predict undesirable situations and stress levels. The prediction task will try to beat the baseline of 70-91% accuracy.
- Interfacing with FitBit ionic to get high level features such as sleep quality, heart rate etc; implementing interactive visualizations in the android app to display statistics.

Assoc. Data Engineer, Media.net - *Database design, analysis, modelling*   *Aug 2011 – Jul 2015*

Media.net ad exchange - *Reporting, notification and messaging, access control*

- Worked on advertiser ad-exchange platform by media.net which is meant to compete with Google AdWords. The platform provided the advertisers a way to display brief advertising copy, product listings and video content online.
- Improved throughput of reports by reducing the response time from 500ms to 100ms. Simulated OLAP cube through conventional SQL programming which allowed consolidated reports in a single API. This required extensive refactoring of SQL code from static SQL to dynamic SQL and query optimization in 20 stored procedures.
- Facilitated development of Messaging and Notification framework using SQL. The architecture of the system was modular and well designed which enabled the team to deploy it for multiple applications. It allowed sophisticated targeting options to select advertisers and system admins making communication swift and efficient.

Control.media.net - *Exclusive backend developer, full-text, search engine and reports*

- Developed backend data architecture for media.net's website. The website allowed advertisers to maximize their revenue through tailored reports and ad targeting options. Implemented Full-Text Engine for FAQs using SQL-Server which powered the search engine for FAQs, which helped identify system process and complexity.

PROJECTS

Sample Bounds Estimation (Advisor Prof. Erik Learned Miller)- *Python, Statistics*   *Jan 2018 - Present*

- Creating a library using Python and Seaborn to produce various statistical plots for bounds based on the Central Limit Theorem, Bootstrap, Chernoff Hoeffding Inequality, etc. Developing an algorithm that derives tight probabilistic bounds on statistical properties (mean, median, variance, etc.) of samples drawn from an unknown distribution.

Hyper-parameter optimization with Poisson Disc and Heuristics - *Python, PyTorch*   *Oct 2017 - Dec 2017*

- Developed a novel, more efficient way of optimizing Neural Networks using Poisson Disc Sampling and Heuristics. The techniques used in the project not only improved the avg. accuracy of a classification problem on CIFAR-10 dataset but also led to more consistent results with low stdev and variance when compared to Grid Search.
- Github : **github.com/abhinavshaw1993/hyperparameter-tuning-NN**

Hybrid Reverse Dictionary - *Java, Shunting-Yard algorithm, Stacks, Sets, Hash-Maps*   *Jul 2016 - Present*

- Implementing a Reverse Dictionary with a Hybrid approach with the aid of database and Java; the database was used to filter words with the aid of Dijkstra's Shunting-Yard algorithm for query evaluation; the result is then to be ranked by vectorization or other machine learning techniques reducing cost of computation significantly.

PROGRAMMING SKILLS

Languages: Python, SQL, Java, C++, Matlab, HTML, CSS

Libraries and Technologies: Scikit-learn, NumPy, SciPy, Seaborn, PyTorch, SSAS, Pandas, HIVE