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Sakshi Suman

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A mathematician and a Software Engineer solving complex challenging problems for 2 + years. Looking for a long-term career in research oriented roles in the field of Machine Learning (Computer Vision / Natural Language Processing).

Education

- M.S. in Applied Mathematics (Machine Learning). Northeastern University, Fall 2021 - Present.
- B.Tech. in Computer Science Engineering. REVA University, Fall 2015 - Spring 2019. GPA: 8.55/10.
- MOOC: Machine Learning; Linear Algebra; Probability & Statistics; Calculus & Optimization.
- Undergraduate Coursework: Data Structures & Algorithms; Object Oriented Programming; Discrete Mathematics; Graph Theory; Operating Systems; Databases; Computer Architecture.

Employment

Software Engineer – ML **Pelatro Solutions Pvt. Ltd.** **Jun 2019 – Jun 2021**

- Implemented K-Means algorithm to predict the Next Best Action for customers. Achieved accuracy of 61 %.
- Developed an interactive web application to analyse and report statistics for a Machine Learning pipeline.
- Predicted the Customer Lifetime Value using a Markov Chain and achieved an accuracy of 76 %.
- Optimized duplicate row detection algorithm using probabilistic approach; reduced time complexity from $O(n^2)$ to $O(n)$.
- Containerized and deployed end-to-end applications on production servers using Docker.

Machine Learning Intern **Walkter Beaker Lab Pvt. Ltd.** **Jan 2019 – May 2019**

- Built a CountVectorizer NLP model for comparing a user resume with job descriptions. Automated resume matching process and decreased the time spent by recruiting team by approximately 80 %.
- Designed an efficient user visit logging system to calculate the user retention rate and automated email system for an ATS.
- Adapted Tesseract OCR's code, to increase accuracy in text-recognition for screen fonts from 50 % to 95 %.

Teaching Assistant **REVA University** **Jan 2018 – Dec 2018**

- Courses: Core Java, Object Oriented Programming, Mathematical Foundations of Computer Science I & II.
- Promoted to Head TA in Fall 2018; led weekly meetings and supervised four other TAs.

Projects

- **Transfer Learning with MobileNetV2** Used pre-trained weights of MobileNetV2 Convolutional Neural Netowrk on ImageNet dataset. Modified the network architecture by deleting the top layer and adding a new classification layer. Performed training only on the new layer in order to create a binary Alpaca classifier to increase accuracy from 0 % to 99 %.
- **Matrix Factorization for User Rating Predictions** Derived update rules and implemented Weighted Alternating Least Squares for predicting missing user ratings of MovieLens data. Evaluated the algorithm using MSE and found that it is 62 % better than baseline model.
- **Data Modeling using Markov Chain** Performed Time Series Analysis of average runs of opening batters in baseball from 1871 – 2015 with a Markov Chain. Calculated autocorrelation between original time series and a simulated time series. Performed GoF test at 5 % significance level to determine valid states of Markov Chain in a two-step transition matrix.
- **Customer Experience & Data Analytics Project** Proposed and developed a Sentiment Analysis model to predict customer satisfaction on chats and emails using Logistic Regression and Naive Bayes models in Python and SQL.
- **Predator-Prey Mathematical Modeling** Modeled Predator (Bald Eagle) - Prey (Rodents) population growth using Lotka-Volterra equations modified with weak Allee effect and pesticide constant. Simulated population plots with/independent of time and improved the existing model accuracy to 94 %. Also calculated lethal limit for rodenticide usage.
- **Northeastern NEWS Updates** Developed a Google Chrome extension to get instant notification updates from *News @ Northeastern* portal using JavaScript, AJAX, HTML, and CSS.

Languages and Technologies

- Python; Java; C++; C; SQL; MATLAB; HTML; CSS; TypeScript; XML; JSON; Visual Basic
- tensorflow; keras; PyTorch; scikit-learn; NumPy; SymPy, pandas; matplotlib; Spark; HBase; HIVE; HDFS; OpenCV; MongoDB; PostgreSQL; MySQL; Angular; JUnit; pytest; JMockit
- Git; Jupyter Notebook; Linux; IntelliJ IDEA; PyCharm; Docker; Excel