Anunay Rao

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EDUCATION

University at Buffalo, The State University of New York **Expected: December 2019**
Master of Science in Computer Science
Introduction to Machine Learning, Computer Vision and Image Processing (CVIP), Statistical Data Mining, Algorithms (Sequential and Parallel), Database Systems, Distributed Systems, Data Intensive Computing

Shri. G.S Institute of Technology and Science, India (R.G.P.V) **May 2018**
Bachelor of Engineering, Computer Engineering

TECHNICAL SKILLS

Languages	C, C++, Java, Python, R
Web	HTML5, CSS3, JavaScript
Databases	MySQL, SQLite
Technologies/Tools	Android Studio, RStudio, Jupyter, Git, Eclipse, Tensorflow, Keras, OpenCV, MapReduce

PROJECTS

Relational Query Engine **Databases Systems** (*Java, MySQL, JSQLParser)*
Developed a simple SQL query evaluator with support for Select, Nested-Select, Project, Join, Bag Union, Aggregate functions (COUNT, MIN, MAX, AVG, SUM), GROUP BY, and ORDER BY clause on Big Data(TPCH).

Simplified Amazon Dynamo **Distributed Systems** *(Java, Android, Socket Programming)*
Developed a Dynamo-style key-value storage implementing partitioning, replication and failure handling to provide per-key linearizability and availability even under failure.

Text Processing using Hadoop MapReduce **Data Intensive Computing** *(Python, Tableau, MapReduce)*
Developed a Big Data pipeline to perform Data Cleaning and then word count and word co-occurrence algorithms on the text data collected from Twitter REST API, New York Times API, and Common Crawl Data on Sports and then performed visualization in Tableau.

Exploratory Data Analysis **Data Intensive Computing** *(R, RStudio, Jupyter, Shiny)*
Analyzed Influenza outbreak by performing EDA by extracting tweets by using Twitter REST APIs and comparing the data with Official Influenza Statistics. Also, built a responsive web app using Shiny in R to publish the results.

Distributed Hash Table (CHORD) **Distributed Systems** *(Java, Android, Socket Programming)*
Implemented chord based peer to peer DHT functionality in Android which is used as a base system in BitTorrent. It provides node joins, ID space partitioning using consistent hashing, and ring-based routing.

Group Messenger **Distributed Systems** *(Java, Android, Socket Programming)*
Developed a Group Messaging Android Application with decentralized TOTAL and FIFO message ordering guarantees.

Hough Transform **CVIP** *(Python)*
Implemented Hough transform in python to detect lines and circles in the image.

Multi-Scale Template Matching **CVIP***(Python)*
Implemented template matching in Python to find the template in the given image, invariant of template size.

Learning to Rank Dataset **Intro. To Machine Learning** (*Python)*
Implemented both the closed form solution and Gradient Descent solution for linear regression in Python on the LeToR Dataset released by Microsoft Asia.

Panorama **CVIP***(Python)*
Warping two images using the Homography matrix computed with RANSAC.

K-means Clustering and Color Quantization **CVIP***(Python)*
Implemented K-means clustering in Python and then applied it to image color quantization to represent an image with specified number of colors.

Gaussian Mixture Model **CVIP***(Python)*
Implemented GMM using Expectation Maximization Algorithm on Old Faithful Dataset.

Morphological Operators **CVIP** *(Python)*
Implemented morphological operations, Opening, Closing, Dilation and Erosion then using them to remove noise from an image and extract boundaries.

Handwriting Comparison **Intro. To Machine Learning** (*Python)*
Implemented linear regression, logistic regression and Neural Network in Python on Human Observed Features Dataset and GSC Features Dataset extracted from CEDAR Letter Dataset which consists the image snippets of the word “AND”.

Reinforcement Learning and Deep Learning **Intro. To Machine Learning** (*Python)*
Implemented Deep Reinforcement Learning Algorithm – Deep Q-Network to teach the agent to navigate in the grid world environment in order to reach the goal.

Handwritten Digit Classification **Intro. To Machine Learning** *(Python)*
Implemented Logistic regression, Neural Network, Random Forest and SVM on the MNIST and USPS Dataset. Further, implemented ensemble of these four classifiers using Majority Voting.

PUBLICATIONS

Rao Anunay, and Biseria Apoorva. "Human Computer Interface-Augmented Reality". *International Journal of Engineering Science and Computing* 6.8 (2016): 2594-2595 Print.