

# AKSHAY KULKARNI

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[akshay-a-kulkarni.github.io](https://akshay-a-kulkarni.github.io) : Portfolio

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## EDUCATION

### NORTHEASTERN UNIVERSITY

**Khoury College of Computer and Information Sciences**

[Master of Science] MS in Data Science (GPA : 3.713/4.0)

**Courses :** Algorithms, Data Management & Processing, Database Management Systems, Information Retrieval, Large Scale Parallel Data Processing, Supervised Machine Learning

**Boston, MA.**

Sep 2018 - May 2020

### BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI – DUBAI CAMPUS

B.E. [Hons] in Electronics and Communications Engineering

**Related Courses :** Digital Image Processing, Communication Systems

**Dubai, U.A.E.**

Aug 2012 - Jul 2016

## SKILLS

**Languages :** Python, R, SQL, Java  
Scala, Bash, MATLAB, Octave,  
HTML, CSS

**Tools & Platforms :** IDEA & PyCharm, RStudio,  
Anaconda, Jupyter, Tableau, PowerBI, GSuite,  
Git, MySQL, Docker, AWS, GCP

**Libraries & Frameworks:** Scikit-Learn,  
NumPy, Pandas, TensorFlow, Keras,  
SQLA, Django, Flask, DASH, RShiny,  
Lucene, Spark, MapReduce, FastAI

## EXPERIENCE

### NORTHEASTERN UNIVERSITY - Teaching Assistant

**-CS-3200 [Database Design]**

**-DS-4100 [Data Collection, Integration and Analysis]**

- Designing coursework and assignments, evaluating submissions and student projects.
- Guiding and teaching students in-class / during office hours to help them master & reinforce learning concepts such as tidying, storing, analysing data and employing ML techniques in R designing databases in MySQL.

**Boston, MA.**

Sep 2019 – Dec 2019

Jan 2019 – May 2019

### PREDIKLY - Junior Analyst

- Worked on data procurement & cleaning as well as generating statistics, visualizations & dashboards for clients to manage their practice with BI Tools & assisted in building predictive analytics solutions.

**Pune, India.**

Aug 2017 - May 2018

### ZIO TECHNOLOGIES L.L.C - Sales and Statistics Intern

- Acquisitioned and analysed product statistics/data for projects and request of tender submissions, and assisted on Systems and AV integration for extensive media projects.

**Dubai, U.A.E.**

Aug 2015 – Jan 2016

## PROJECTS

### Distributed Matrix Factorization for Collaborative Filtering/Recommender Systems in Spark

**Oct 2019 – Dec 2019**

- Developed a scalable parallelized algorithm with near linear speedup to decompose a large & sparse ratings matrix into lower k-dimensional user & item latent factor matrices using Alternating Least Squares method in order to optimize large scale computation of recommendations in explicit collaborative filtering.

### Chest X-ray Diagnosis using Convolutional Neural Networks

**Oct 2019 – Dec 2019**

- Performed classification of 14 different disease categories from the NIH Chest X-ray Dataset containing 112,120 patient records by training modified CNN architectures such as ResNet50 and InceptionV3 using Pytorch, FastAI and Keras in deep learning cloud VM instances.

### Decision Support Framework/Multi-Objective Optimization & Visualization Tool

**Jun 2019 – Aug 2019**

- Deployed a re-usable database-agnostic decision support tool with a React front-end and the core components developed purely in Python to enable a user to perform trade-off analysis.
- Implemented functionality to extract & display a manipulable decision table & calculate the Non-Dominated set of objectives to aid the user with identifying the best min/max multi-objective solution.
- Incorporated methods to plot a spatial interactive Pareto Frontier/Curve for the selected features or objectives

### Building a complete Search Engine/ Information Retrieval Model

**Mar 2019 – May 2019**

- Implemented a retrieval model in Python and Apache Lucene, using several ranking algorithms such as BM25, QLM & Vector Space Model with pseudo-relevance feedback to rank parsed and cleaned documents
- Optimized the search engine by performing stopping, stemming and query expansion with Word2Vec-trained embeddings & generating summarization with Luhn's algorithm

### Analytical Nature Classification on O\*NET Occupation Database using Gaussian Process Classifier

**Mar 2019 – Apr 2019**

- Analysed performance of Gaussian Process Classifier on the O\*NET database (from the U.S. Department of Labor) with other models like LDA, QDA, RandomForest to quantify the analytical nature of an occupation

### WebCrawler with PageRank in Python

**Jan 2019 – Feb 2019**

- Built a comprehensive web-crawler in Python performing BFS/DFS to generate a web graph & retrieve data from a specified seed page for cleaning & tokenization in order to perform analysis and generate corpus statistics and implemented PageRank algorithm from scratch to rank the crawled pages by their importance.