

# Safwan Mahmood

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## EDUCATION

**New York University - Courant Institute of Mathematical Sciences**

New York, NY

*M.S. in Computer Science, GPA: 3.86*

**Exp Dec 2022**

- Relevant Courses: Adv. Databases, Big Data & Machine Learning, Vision, Multicore Architecture, Operating System.

**Indian Institute of Technology**

Hyderabad, IN

*B.Tech. in Computer Science; B.Tech in Engineering Science.*

May 2018

- Relevant Courses: Data Structures & Algorithms, Distributed Systems, Data Science & Data Mining, Deep Learning.

## TECHNICAL SKILLS

**Languages**: C/C++, Python, Java, Scala, Javascript, SQL. (**Parallel Programming**: OpenMP, MPI )

**Frameworks**: Spark, PyTorch, Scikit-learn, OpenCV, Kafka, Storm, Hadoop, PySpark, NodeJS.

**Other Tools and Technologies**: ElasticSearch, Cassandra, Airflow, GCP, AWS, NoSQL.

## PROFESSIONAL EXPERIENCE

**Walmart Labs**

Bangalore, IN

*Software Development Engineer 2, Team: Digital Marketing Asset Services*

Jan 2020 – Dec 2020

- Managed and mentored a team of 3 to handle disaster recovery, stress testing of infrastructure, setting up alerts and monitoring for 5X traffic on display ads services (Storm pipelines) during Walmart's online holiday season sale.
- Led integration of rules engine (RedHat BI tool) into Ads platform enabling instant deployment of rules on offers, cutting down catalog (300+ million offers) refresh time from 36+ hours to less than an hour using ElasticSearch.
- Enabled multiple team access to rules engine by adding user authentication/management features using Keycloak tool.
- Collaborated with other teams (SEO, Display) for onboarding onto ads platform providing technical support.

*Software Development Engineer 1, Team: Search Engine Marketing (SEM)*

Aug 2018 – Dec 2019

- Redesigned an in-house Ads PaaS from Spark-Batch to Spark-Streaming processing and managed critical points of platform achieving ads publish rate of 300X and reducing alerts/errors by 80%.
- Achieved 4X conversion for underperforming/cold offers and slashed marketing spendings by 20% with a real-time dashboard for 300 million offers with monitoring and alerts.

**Busigence Technologies (Team: Marketing Solutions)**

Bangalore, IN

*Machine Learning Engineer Intern*

May 2017 – Aug 2017

- Devised a framework to solve marketing problems using Inferential Analytics and implemented a module for Review and Corpus Summarization lowering overall time by a factor of 3X, eliminating manual operations.

## PROJECTS

**Tamper Detection in Images using Deep Learning methods**

Aug 2021 – Dec 2021

- Detection of manipulation in images by training CNN with patches extracted from the images using masks on CASIA2.0 dataset. Engineered a 400 dimensional feature vector from fully connected layer of CNN and classifying the features with SVM. Also used fine-tuning on pre-trained models like ResNet, VGG16/19 as feature extractors.
- Enhanced efficiency of algorithm by using augmented images while training, reporting an avg test accuracy of 98.6%.

**Replicated Concurrency Control and Recovery algorithm**

Aug 2021 – Dec 2021

- Implemented a distributed algorithm with replication for a key-value store using available copies approach for replication and two phase locking (using read and write locks) at each site with validation at commit time.
- Avoided deadlocks with the wait-die protocol and optimized read only transactions using multi-version consistency.

**Unsupervised Anomaly Detection in AI Ops Lifecycle**

Jan 2021 – May 2021

- Presented various techniques for real time anomaly detection (ISF, LSTM, SARIMA, CNNs) of CPU and other performance metrics in large scale systems to improve monitoring and diagnosis.
- Reported highest accuracy with Isolation forests on 7.5 million real world CPU metrics dataset.

**Fast Image Query Retrieval using Spectral Hashing**

Aug 2017 – Dec 2017

- Coordinated with a team of 3 to build a fast image query retrieval system from large database of images by generating Hamming codes using features from BRIEF image descriptor.
- Accomplished improved accuracies by 30% using PCA to tackle redundancies and increase sparseness.

## ACHIEVEMENTS

- Open Source contribution to a tool (Keycloak) in Authentication/Authorization module. Oct 2019
- Soccer team captain; Alumni Cell Relations Manager at IIT-H; Co-founder at HungerTorrent. Aug 2017 – Aug 2018