# SHUBHAM SINGHAL

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Passionate Software Developer and Machine Learning Engineer focused on building intelligent solutions which humans can interact intuitively.

**EDUCATION**

MSCS, Machine Learning, **Georgia Institute of Technology, Atlanta, USA** Graduating in May 20203.33/4

* Course Work – Numerical Linear Algebra, Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision

# B.tech. (I.T.), Indian Institute of Information Technology, Allahabad, India June 2010 – July 2014 9.27/10

# Course Work – Data Structure and Algorithms, Linear Algebra, Operating Systems, Distributed Systems, DBMS

# PUBLICATION

D. Tomar, S. Singhal, and S. Agarwal, “Weighted Least Square Twin Support Vector Machine for Imbalanced Dataset,” Int. J. Database Theory Appl., vol. 7, no. 2, pp. 25–36, 2014

# RESEARCH EXPERIENCE

**Indian Institute of Technology, Bombay Jan 2014-June 2014**

* ***Eye Tracking for Natural Language Processing****.*

To identify cognitive underpinnings in the text, an algorithm to generate consensus scanpath (eye movements) out of multiple scanpaths using **Bayesian Probability Reasoning** and **Hidden Markov Model** was proposed.

# Indian Institute of Science, Bangalore May 2012-June 2012

* ***Analysis of eye gaze scanpath data.***

To determine the dependency between different sentences in the text, an algorithm was proposed to convert scanpaths into an **undirected weighted graph** by combining saccades to form edges and fixations as nodes.

# ACADEMIC PROJECTS

# Generating sketches from photos and vice versa using Multi-Adversarial Network Aug 2019 – Dec 2019

Photos to sketch is considered as image-to-image translation task. Two generator sub networks GA (for photo to sketch) and GB (sketch to photo) with 3 convolution/ deconvolution layers were used.Three discriminator sub-network were applied to threes outputs from each generator to provide supervision to the network. It was implemented in **Pytorch** and **Numpy**.

**Classification of Images using Artificial Neural Network Jan 2019 – May 2019**

Classified images using the connectionist model **ANN** with 84% accuracy. Classes were further classified into subcategories using another ANN for each class. Experimented with **SVM’s** using **Scikit** **Learn** to compare the efficiency.

**Improving the efficiency of the Information Retrieval system July 2013 – Dec 2013**

Disambiguated the sense of the ambiguous word in a query by looking at the context in which it is used to retrieve the best relevant documents in the **Information Retrieval System**.

# WORK EXPERIENCE

**Booking.com, Amsterdam | Software Engineer August 2018 to August 2019**

* ***Deal of the Day (DOTD)***

Designed an algorithm to determine partners which would be eligible for the DOTD program. The program provides them better ranking in search results on the particular day. Wrote an **oozie Job** in **pyspark** on **Hadoop** clusters.

* ***Campaign Microservice***

Implemented a microservice to create campaigns. **Alerting Monitoring** and **A/B testing** were integral part of the service.

**Microsoft India Development Center, India | Software Engineer March 2017 to August 2018**

* ***Drive Vicinity***

Researched, designed and implemented the algorithm to fetch the drives data from **Amazon Redshift**, determining regions where people drive the most, pushing most visited locations to **S3** and exporting further down to **Postgres**.

* ***Reporting Microservice***

Wrote a **microservice** to generate reports on users’ drives. Microservice was deployed on **Kubernetes**, as **Docker** Containers. Service was written in **Python 3, Django**. Reports were generated asynchronously using **Redis** queue and **celery** workers. **Integration Testing**, code coverage with **Unit Testing** was maintained above 80%**.**

* ***GDPR***

Wrote the service which will delete the users’ data on request. Delete request could be withdrawn within 30 days. Users’ delete requests were stored in **Azure Cosmos DB (NoSql)**. Cron Job will run every day to delete 30 days older requests.

**Adobe Systems, India | Member of Technical Staff July 2014 to March 2017**

* ***2 way SSL in Adobe Experience Manager (AEM)***

Added the support for **2 way SSL** authentication using **Java** in AEM on web.

* ***Adobe SignIn workflow***

Integrated Adobe Sign in the AEM workflow, asynchronously by **multithreading**. Threads kept on polling the Adobe Sign service to check for user’s action, later they callback the workflow when user sign the document.