Harsh Maheshwari

Quantitative Research & Data Science

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Education and Scholastic Achievements

- **B Tech** in **Chemical Engineering** from **Indian Institute of Technology Bombay** | CGPA - 7.7 *June'17-May'21*
- **Chemical Engineering Exchange Scholar** representing IIT Bombay at **Denmark Technical University** *Jan-June '19*
- Secured **AIR 735** among **1.3 million** in **JEE Main** & AIR **1382** among **0.2 million** in **JEE Advanced** *May'17*
- Cleared **Google Analytics Individual Certification Exam**, crucial for **business** with **online** presence *Aug'20*
- Received **Letter of Appreciation** for exceptional performance from **HRD Minister** Smriti Irani in **CBSE Class 10**

Professional and Research Experience

❖ **Enterprise Data and Intelligent Automation Engineer | ANZ Bank** *June'21 - Present*

- Responsible for sourcing data & creating pipelines for 70+ sources using IBM Data Stage, Teradata SQL & Control M
- Creating & managing DataStage jobs in production to ensure correct loading of data from ascii, semi ascii or ebcdic files
- Developed an automation tool using Robot Framework & python for reducing the development & testing time by 50%
- Leading an initiative to improve the technology culture & adoption of ML, DevOps, Automation first approaches in bank

❖ **Business Intelligence | Axis Bank** *Apr '20 - Jun '20*

- Built a **micro-service** for predicting **customer income** using nominatim API, **scikit-learn, docker** and **Kubernetes**
- Engineered **new features** based on customer address using **K nearest neighbor** algorithm and geocoding services
- Obtained **accuracy** of over **90%** using a **XGboost** regression model based on customer history and transaction data
- Developed a web interface using **Django** framework and containerized in **Docker** for easier deployment

❖ **AI Research Scholar | Prof. Bryan Hooi | School of Computing | NUS, Singapore** *Nov '19 - Dec '19*

- Developed a **Temporal Attention** model for node classification and link prediction tasks in different temporal graph
- Found **efficiency** of models like **Attention Walk, TMF, CTDNE, BANE** on different datasets for link prediction task
- Understood dependency of graphs on time using dynamic models like **Node2Vec** and **Temporal Node Embedding**
- Found **inefficiencies** in the above models and improved them to get **AUC of 86%** for College Messages dataset

❖ **Computer Vision Lead | Innovation Cell | Barcelona Smart Drone Challenge** *Oct '19 – Dec '20*

Under guidance of Prof. Dhwanil Shukla, worked in a team of 15 students of different departments to innovate reality

- Designed and developed an **autonomous** fixed wing for **search and rescue** missions customized for the challenge
- Integrated a ROS enabled **camera system** for detection of characters from a height of **50 meters** on a **flying drone**
- Developed a **multi-core zoom-in** characters recognition model based on **Char74** dataset using **OpenCV & Keras**
- Obtained accuracy of **94 %** using **transfer learning** on **MobileNetV2** architecture on custom aerial data set

Data Science & Deep Learning Projects

❖ **Time Series Analysis | Modelling of Gas sensor data | Prof. Sharad Bhartiya** *Aug '19 - Nov '19*

- Predicted concentration of dynamic gas mixture from sensor data using **ARX, ARMAX, ARIMA, non-linear ARX** models
- Achieved **accuracy** of **92.96%** & **92.75 %** for concentration of CO & Ethylene respectively for 1 step ahead prediction
- Analyzed system in **1%, 10%** & **colored noises** using Impulse estimate, Step estimate plots & ETFE plots
- Performed sampling time analysis, correlation analysis, PSD analysis & DFT analysis for time series sensor data

❖ **Natural Language Processing | Hate & Offensive Speech Detection** *Oct '18 - Nov '18*

- Worked in **team of 4 students** to ideate and develop a module aimed to identify a tweet as **hate or offensive speech**
- Cleaned unnecessary characters & punctuation using **NLTK** and represented the frequency of words as a **word cloud**
- Modified **Glove Word Embedding** for given data and each word in text vocabulary was mapped to vector in **50D**

❖ **Computer Vision | Image Classification & Object Detection** *May '19- Feb '20*

- Developed a model for **Parking Spot Detection** from a real time camera feed using **OpenCV and RetinaNet**
- Developed Emotion recognition, Face detection and recognition models using **face recognition library**
- Deployed DenseNet, GoogleNet, MobileNet, RetinaNet, ResNext, SENet on CIFAR10 dataset using **PyTorch**

Technical Skills, Courses & Certificates

Languages: Python, MATLAB, Julia, R, SQL **DBs**: MySQL, SQLite, Teradata, Big Query **Big data**: Apache Spark, SparkML, Vaex	**Tools**: MS Excel, KNIME, Jupyter, Google Data Studio, Control M, IBM InfoSphere Information Server, Kubernetes, Docker, GitHub, Google Analytics & AdWords, Atlassian Suit
Johns Hopkins Coursera Certifications: Data Scientist's Toolbox, R Programming, Getting & Cleaning Data, Exploratory Data Analysis	**Courses**: Data Analysis, Optimization Models, Calculus, Computer Programming, Machine Learning, Numerical Analysis, Process Modelling & Identification, Process Control, A.I. in Process Eng.
Soft skills: Agile Team Management, Storytelling Critical thinking, Hypotheses Generation	**Hard Skills**: Quantitative Research, Time Series Analysis, Computer Vision, Natural Language Processing, Graph Analysis

Extracurricular Activities

Hackathons	• One of the **top 10** teams in college to be prized at **Intel Python Hack fury AI hackathon**	*'19*
	• **2nd Runner up** among **30+ teams** from IIT Bombay in a Andro-NG Android app development	*'18*
	• Secured **2nd** position among all in Chemical **Process Simulation** hackathon using **ASPEN**	*'18*
Cultural	• Secured **1st** position in **Literary Arts** GC & **3rd** position in **Street Play Arcade**, for Hostel 2	*'17*
	• **Planned** & travelled across **10+ countries, 15+ cities** in Europe on a **short string budget**	*'19*
Sports	• Successfully completed **yearlong Volleyball training** under NSO program of IITB	*'17*
	• **Won Gold** in the Tug of War team game General Championship for Hostel 2	*'18*
Volunteer	• Worked with **team** of **volunteers** to enhance experience of student guests at **Mood Indigo**	*'17*