Vishal Keswani

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EDUCATION

Indian Institute of Technology, Kanpur	BS-MS Economics Minor-Machine Learning	10/10 (PG) 8.6/10 (UG)	**Department Rank 1** in MS batch Graduation with **Distinction**	2021
Kendriya Vidyalaya 1, Ajmer	CBSE (Senior Secondary)	96.4/100	School Rank 1 and **Best Student**	2015
East Point School, Ajmer	RBSE (Secondary)	94.2/100	School Rank 1, 100% in Mathematics	2013

SCHOLASTIC ACHIEVEMENTS

- **Ranked 1st** in FinSim international challenge under FinNLP Workshop on NLP in the FinTech Domain (2020)
- **Stood 1st** in Task A of Memotion Analysis under SemEval International Challenge (on Semantic Evaluation) (2020)
- Earned DeepLearning.AI **TensorFlow Developer Professional Certificate** (Specialization of 4 courses) (2020)
- One of 2 students in Economics in India to get a Commendation Certificate and Grant under SURGE program (2018)
- Secured **AIR 538** in JEE Mains (City Rank 1) & AIR 2191 in JEE Advanced (City Rank 2) among 1.5 million (2016)
- Awarded **Certificate of Merit** by **MHRD** and KVS for exceptional performance in C.B.S.E. examination (2015)

INTERNSHIP PROJECTS

MURATA VIOS | Computer Vision Intern (May'20-Aug'20)

Computer Vision on Edge devices for the visually impaired using TensorFlow Lite

- Streamlined the pipeline: converting raw images to tfrecords, training, conversion of checkpoints to **tflite** format
- Customized **Object detection** (COCO dataset) and **Face Detection** (Open Images dataset) for Raspberry Pi 4
- Trained quantized **MobileNet V2** (small CNN) on a subset of LFW dataset & user faces for **Face Recognition**

NOKIA SOLUTIONS AND NETWORKS | Data Science Intern (May'19-July'19)

Auto-Suggesting inquiry questions to Care Engineer based on client case

- Extracted e-mail bodies (doc to csv), followed by tokenization, removal of stop words, stemming, lower casing in **nltk**
- Clustered client queries using **k-means** (using **tf-idf** scores & **cosine-similarity**), reported 3 most similar questions

SURGE, CSE Department | Research Intern | *Mentor: Dr Nisheeth Srivastava* (May'18-Dec'18)

Effect of probabilistic sample size on preference behavior via web game

- Designed web experiment using HTML, CSS, JavaScript; simulated bets via **Box-Muller** method & Logistic function
- Made 4 types of trails, computed mean reaction times & performed outlier detection using **IQR** method in MATLAB

PUBLICATIONS

Hypernym Detection in the Financial Domain via Context-Free and Contextualized Word Embeddings

FinNLP-2020, 2nd *International Workshop on Financial Technology and NLP, IJCAI-PRICAI 2020*

- Used **Word2vec** word-embeddings trained from scratch & pre-trained **BERT** word-embeddings with simple classifiers
- Word2vec with **Naïve Bayes** & BERT with **Logistic Regression** gave best test accuracy of **88%** & mean rank 1.2

Unimodal and Bimodal Sentiment Analysis of Internet Memes

SemEval-2020, 14th *International Workshop on Semantic Evaluation,COLING-2020*

- Implemented Naïve Bayes (text), Combined **CNN** (image) and **Feed-Forward Neural Network** (text) using **SVM**
- Fine-tuned BERT & Multimodal Bitransformer; text-only FFNN with Word2vec gave best Macro-F1, **63%**>baseline

KEY PROJECTS

Product Recommendation System (CS771A) *Mentor: Dr Purushottam Kar* (Aug'19-Nov'19)

- Trained 3 extreme multi-label classification algorithms, Parabel, PfastreXML, and FastXML on a dataset of 10k users
- **FastXML** performed overall best with model size **1.42mb**, prec@1 **80.4%**, and prec@3 **49.7%** on the test dataset

MNIST Classification and Generative Modelling (EE698V) *Mentor: Dr Vipul Arora* (Aug'19-Nov'19)

- Implemented **VAE** with Planar Normalizing Flows to generate MNIST digits, least loss for flow length 8 with K=6
- Implemented **PCA** & **NMF** from scratch, classified MNIST images, NMF gave 80% accuracy on the testset for K=3

ARIMA vs LSTM: Time Series Forecasting (ECO342A) *Mentor: Dr Deep Mukherji* (Jan'19-Apr'19)

- Obtained seasonally adjusted real US GDP (quarterly), used **9:1 split** with walk-forward validation (rolling forecasts)
- **ARIMA(1,1,1)** showed least MSE, **LSTM** showed further **23%** reduction in MSE with 2 neurons (batch 1,epoch 10)

Effect of corruption on Expenditure and FDI (ECO311A) *Mentor: Dr Debayan Pakrashi* (Jan'19-Apr'19)

- Performed **F-test** & **LM test**, they favoured use of pooled **OLS** regression over Fixed & Random effect models resp.
- **Adjusted R-squared** & coefficients revealed that corruption fosters capital expenditure & FDI but inhibits growth

RELEVANT SKILLS & COURSES

Programming: Python, R, C, C++, HTML, CSS, JavaScript | **Others:** SQL, Bash, Linux, Windows, MS Office, Latex
Familiar Python Packages: TensorFlow, Pytorch, Pm4Py, NumPy, Pandas, Nltk, Keras, TextBlob, ScikitLearn

Intro to Machine Learning	Probability and Statistics	Bayesian Econometrics	Fundamentals of Computing
ML for Signal Processing	Analysis & Linear Algebra	Financial Econometrics	Data Structures & Algorithms
Natural Language Processing	Econometrics	Stochastic Processes	Principles of Database Systems

EXTRA-CURRICULAR ACTIVITIES

- Worked as **Company Coordinator** at SPO and **Senior Executive** (MnP) at Entrepreneurship Cell during 2017-18
- **Stood 1st** in British Parliamentary Debate in Galaxy'17, **Best Speaker** (region) in Youth Parliament Competition'13-14
- Became **School Caption** (Senior Secondary), **Captained** School Cricket Team (Secondary) and won a Fair-Play award