

**Mrigank Tiwari**  
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## **Education**

MS in Data Science	The George Washington University	3.72/4.0	Dec'17
BE in Elec & Telecomm	IET-DAVV, Indore (India)	3.41/4.0	May'11

## **Technical Skills**

**Skills:** SQL, Python, Linux, System Design, Data structures & Algorithms, Tableau, Machine learning, Regression, Classification, Scikit-Learn, Pytorch, Tensorflow Keras, Tensorflow Lite, NLP, LLM, Generative AI, Retrieval Augmented Generation, Docker, Kubernetes, MLOps

## **Work experience**

**Break from work due to health issues** May'24-Present  
**Senior Chief Engineer** | Samsung Research, India Sept'19-Apr'24

- Develop ITN use case in assistants with LLM using Lora fine tuning. The work helps improve dependency on rules and humans by reducing failure cases by 13%.
- Multimodal End-point detection, using different fusion methods like cross-attentions, gated fusion. This approach helped us show significant improvements in predicting speech endings for catch-all phrases.
- Solving the problem of empathetic response generation, using pre-trained language models with methods like prompt learning that would allow for few-shot learning.
- Development of Natural Language Generation module, domain specific, knowledge grounded, utilizing transfer learning.
- ITN application packaging using Docker containerization.

**Data science consultant** | Fractal Analytics Inc. Aug'18-Sept'19

- POC - Developing in-house NLG engine to generate answers to questions asked on Insurance data. Functionality to remember context for drill-down questions.
- Developed Attrition propensity model to understand drivers of customer attrition for Auto LOB, feature selection and XGBoost models.
- Continuous development and maintenance of data pipeline of finance data that supplies data to several dashboards and reports being used by state managers.

**Research Engineer** | N-Join research, NYC Feb'18-Jun'18

- NL2SQL – natural language questions conversion to SQL queries, to extract answers from a database. Neural machine translation with Attention mechanism on LSTMs.
- NLP - Product taxonomy extension from Amazon text reviews – Adversarial deep averaging networks with Attention.

**Research assistant** | Computational Biology Institute, DC May'17-Dec'17

- Development of MetaOmicSet package in R for genomic data analysis and visualization, collaborative research project.

- Completed object development 'metaGenomicSet', data transformation & normalization methods, visualization methods.

**Senior Data Analyst** | Tata Consultancy Services, India

Dec'15-Jul'16

- Responsible for delivering recommendations based upon marketing intelligence and analytics.
- Developed SQL queries to perform CRUD operations, views, joins, subqueries to automate data retrieval efficiently.

**Data Analyst** | Accenture, India

Jun'11-Nov'15

- Data analysis using statistical models to understand customer behavior and demographics as a part of marketing analytics.
- Implemented K-Means & Hierarchical clustering to understand market segments we can capitalize on for the business.
- Created dashboards in Excel and Tableau by using pivot tables and VLOOKUP.

## **Publications**

- **Plos One Journal 2023:** EmoKbGAN - Emotion controlled response generation
- **ICON 2022:** IAEmp: Intent Aware Empathetic Response Generation
- **NLDB 2020:** Natural Language Generation Using Transformer Network
- **ICSC 2019:** End-to-End Product Taxonomy Extension from Text Reviews

## **Academic projects**

- Summarizing PubMed Articles Relevant to ER Admission Records(NLP)
- Testing hypothesis "cryptocurrencies are volatile" using GARCH, time series
- Classification of the UCI Letter Recognition Dataset, using Logistic regression and ANN
- How age and home court advantage affected Kobe Bryant's performance
- Implemented a clustering market basket analysis for an international bank dataset

## **Awards & certifications & recognitions**

- Fractal - On the Spot Award for ownership at work from client leadership (2019 x2)
- Columbian college tuition fellowship 2016-2017
- Accenture Celebrates Excellence award 2011
- Our teams' work is internationally recognized in Samsung Unpacked 2021