Avnish **Kumar**

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Work Experience

Reliance Jio Infocomm. Ltd. *Hyderabad, India*

Research Engineer @ AI-COE

Near Real-Time Speech2Text Application *Jul. 2021 - Present*

- Saved 10000+$ per month by developing a near real-time speech2text platform for Indian-English & Hindi replacing Google S2T API subscriptions
- Served Highly Scalable service to Reliance foundation hospitals, Customer-Care and Mumbai-Indians's Quant Team and many more.
- Finetuned Transformer based wav2vec2 models and used with Domain Specific Language models(KenLM).
- Designed an overall wav2vec2 lexicon decoder for streaming setting. Experimented with numerous audio buffer techniques to achieve really low latency.

Coverage Optimization for Telecom Towers *Mar. 2020 - Jul. 2021*

- Used telecom big-data to develop a scalable Optimiser for Antenna-tilt automation of 80,000+ cell towers in Mumbai, West-Bengal .
- Distributed Graph Clustering on telecom-cell-tower Network to divide into smaller more coherent sub-networks[**patent applied**]
- Pipeline build using Convex Optimization Spark, hive, python, Airflow [**patent applied**]

Threat Detection for Info-Sec *Jul. 2019 - Mar. 2020*

- Designed and Developed a Distributed Anomaly Detection Engine used across multiple teams, For Cyber-Security It monitors 100,000+ servers for suspicious activity
- Experimented with multiple Anomaly Detection Algorithms such as Isolation Forest, Density Methods with Gaussian, Epanechnikov kernels for estimation and Used Apache spark for parallelism and scale

Patents

India

SYSTEMS AND METHODS FOR DETERMINING CLUSTERS OF SECTORS IN A TELECOMMUNICATION NETWORK *Jul. 2020*

- Graph Clustering based on affinity metric derived from demand and coverage area of different telecom antennas.

India

SYSTEMS AND METHODS FOR OPTIMIZING SUPPLY DEMAND IN A TELECOMMUNICATION NETWORK *Jul. 2021*

- Formulated coverage as a constraint quadratic optimization problem in a bipartite telecom network.

PROJECTS

A Novel Model Ensembling Approach

- Developed a Highly-Explainable Ensembling Framework for Machine learning Models. Base models are trained on segmented train-set based on SHAP values. Achieved 5% better performance than a single base model on various benchmarks.

K-Means Center Initializer

- Implemented Farthest-Point First(FFP) a cluster center initialization algorithm for K-Means using python. Improved clustering timing by 30% on various benchmarks and reduced Intra-Cluster Distance by more than 10%.

Deep Learning Based Indian Name Generator

- Implemented a character level sequence model using RNN from scratch using only numpy to generate new Indian Names. Developed rest API to serve this model using Flask. Few Examples - "Dhupesh", "Gourinder", "Narenit" etc.

Education

Indian Institute of Technology (IIT-BHU), Varanasi *UP, India*

Bachelor of Technology *Jun. 2015 - May 2019*

Skills

Languages	Python, C++, Node.js
Tools	Git, PySpark, Docker, k8s, gRPC, flask, MongoDB, SQL, AirFlow, MLflow, CI/CD , Socket.io
Frameworks & Toolkits	PyTorch, TensorFlow, opencv, nltk, Fairseq