VIJAY S KALMATH

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EDUCATION

Columbia University New York, USA
Master of Science in Data Science, 3.8/4.0 Aug 2021 - Dec 2022
Coursework: Deep Learning, Advanced Deep Learning, Machine Learning, Representation Learning, Statistical Inference, Algorithms.

B.M.S College of Engineering Bangalore, India
Bachelor of Engineering in Electronics and Communications, 9.37/10.0 Aug 2014 - May 2018
Coursework: Python, Java, C, Operating Systems, Algorithms, Linear Algebra, Discrete Mathematics and Probability.

WORK EXPERIENCE

Columbia University, AI Model Share New York, USA
Graduate Machine Learning Researcher Aug 2022 - Current

- Deployed aimodelshare python library on pip and conda-forge channels with 2000+ monthly downloads.
- Implemented model determinism and model replication framework using TensorFlow python with AWS Lambda and S3.
- Designed automated cloud storage, API hosting and Model analytics for Keras and PyTorch Models with Onnx framework.

Columbia University, WiMNet Lab New York, USA
Graduate Deep Learning Researcher May 2022 - Aug 2022

- Increased classification accuracy by 30% using Convolutional Neural Networks on Fourier features of radar transmission.
- Developed Time Distributed CNN with LSTMs for image sequence classification, resulting in 35% increase in F1-Score.
- Optimized 5+ Random Forest Ensemble Models and Pipelines on Google Cloud for classification of wind speed from Datasets.
- Performed feature engineering with PCA and TSNE, analyzed 20+ experiment's data to visualize spatial and temporal properties.

Cisco Systems Bangalore, India
Network Engineer-II-Escalation Engineer Jan 2020 - Jul 2021

- Forecasted resource requirements with Regression Models for 8 Quarters. Analyzed Team Performance metrics for 15 Teams.
- Crafted Data Pipelines for real-time monitoring of Application Centric Infrastructure labs, improved server utilization by 40%.

Network Engineer-II Jul 2018 - Dec 2019

- Built models for anomaly detection in SSD performance for 500+ companies (9000+ switches), saving 3000+ work hours.
- Spearheaded 30+ projects to enhance Cisco product usability with containerized log analyzers, low-code and IaaC platforms.
- Debugged and Troubleshot Cisco ACI's RAFT and Linux Subprocesses on distributed computing systems for 400+ Customers.

PROJECTS

BigEarthNet - Land cover Classification from Remote Sensing Images Mar 2022 - May 2022

- Implemented K-Branch CNN with Bidirectional-LSTM based multi-attention architecture for high resolution aerial images.
- Achieved 92% validation accuracy with Transfer learning using XCeption architecture and a custom learning-rate scheduler.
- Won Gold Medal in 2-month long competition with models in top 1st percentile of F1-Score of 450+ models.

Adversarial Training in Distillation of BERT Jan 2022 - May 2022

- Investigated impact of teacher-student model-compression on robustness of 3 BERT-like Language Models with PyTorch.
- Trained semi-supervised GANBERT with 50% unlabeled data, performed distillation and evaluated robustness with TextAttack.
- Investigated performance of 4+ gradient-based adversarial data augmentation techniques with GANBERT and DISTILBERT.
- Identified teacher-student model compression reduces adversarial robustness by 70% under TextFooler Attack.

Spectral Representations for Convolutional Neural Networks Sep 2021 - Dec 2021

- Devised customized spectral pooling, frequency dropout, and spectral convolution TensorFlow layers with Fourier transform.
- Engineered low pass filters for dimension reduction and custom imaginary weights Initializer for spectral convolution layer.
- Attained 80% test accuracy with a 40% decrease of training time with Bayesian Hyperparameter tuned spectral CNN.
- Achieved 2x – 5x times computational speed up with spectral parameterized CNN architectures for ImageNet and CIFAR-100.

SKILLS

Programming Languages – Python, R, JavaScript, C++.
Databases – SQL, Postgres, MongoDB, Elastic-Search.
Python Frameworks – TensorFlow, HuggingFace, WandB, PyTorch, Onnx, Scikit-Learn, NLTK, OpenCV, Seaborn.
Cloud Services – AWS Sagemaker, AWS Lex, AWS Lambda, AWS EKS, Azure Cloud, Google BigQuery, Google Compute.
Infrastructure Technologies – Spark, Linux, ELK Stack, Docker, Kubernetes, Kafka, CI/CD Pipelines with Jenkins, Kubeflow.