VIJAY S KALMATH

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EDUCATION

Columbia University New York, NY
Master of Science in Data Science, 3.8/4.0 Expected Dec 2022
Coursework: Deep Learning, Advanced Deep Learning, Machine Learning, Statistical Inference, Cloud Computing, Algorithms.

B.M.S College of Engineering Bangalore, India
Bachelor of Engineering in Electronics and Communications, 9.37/10.0 May 2018
Coursework: Data Structures and Algorithms, C, Discrete Mathematics and Probability, Python, Java, Operation Systems.

SKILLS AND TECHNOLOGIES

- 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 – Linux, ELK Stack, Docker, Kubernetes, Kafka, CI/CD Pipelines with Jenkins, Kubeflow.

WORK EXPERIENCE

Columbia University, WiMNet Lab New York, USA
- **Graduate Deep Learning Research Assistant** 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 to capture temporal relationship within data.
- Experimented with ensemble models (random forest and XGBoost) for classification of wind speed.
- Performed feature engineering with PCA and TSNE and analyzed dataset to visualize spatial properties.

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

- Automated Team Performance metric analysis for managerial reports. Forecast resource requirement using Regression Models.
- Designed Data Pipelines for stateful tracking of Cisco Application Centric Infrastructure labs, improved utilization by 40%.
- Authored 5 technical briefs on ACI and its integration with Docker Swarm, Kubernetes-Flannel, and OpenStack.
- Supervised hiring and mentoring of 28 engineers in Networking, DevOps technologies, Python, and MongoDB.

- **Network Engineer-II** Jul 2019 - Dec 2019

- Built models for anomaly detection in SSD performance for over 500 companies (9000+ switches), saving 3000+ work hours.
- Spearheaded 30+ automation projects to enhance ACI usability with chatbots, log-parsers, low-code and IaaC platforms.

- **Network Engineer-I** Jul 2018 - Jul 2019

- Troubleshot Cisco ACI with a focus on RAFT and Linux subprocesses on distributed computing systems.
- Integrated Docker and Kubernetes services with ACI on AWS and Azure cloud services.

DEEP LEARNING PROJECTS

Adversarial Training in Distillation of BERT Jan 2022 - May 2022
- Investigated the impact of teacher-student model-compression on the robustness of BERT-like Language Models with PyTorch.
- Trained semi-supervised GANBERT and performed distillation of GANBERT and analyzed robustness with TextAttack.
- Investigated performance of 4+ gradient-based adversarial data augmentation techniques with GANBERT and DISTILBERT.
- Proved that adversarial data augmentation post-model-compression performs better than adversarial training of parent model.

BigEarthNet - Land use 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.
- Developed Resnet-based CNN models to classify land use from RGB and InfraRed Channels of satellite data.
- Won Gold Medal in the 2-month long competition with models in the 1st percentile of around ~450 models.

Spectral Representations for Convolutional Neural Networks Sep 2021 - Dec 2021
- Developed custom spectral pooling, frequency dropout, and spectral convolution TensorFlow layers with Fourier transform.
- Designed 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.