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

Lexalytics, Inc. New York, USA
Natural Language Processing - Machine Learning Engineer Jan 2023 – Current
- Enhanced current multi-lingual Key-Phrase Extraction system with fine-tuned HuggingFace BERT, achieving 0.85 F1 score.
- Boosted BERT model inference pipeline with ONNX runtime accelerator and quantization, reducing API response time by 5%.
- Performed QLORA and LORA training on Falcon-7B and LLAMA2-7B on proprietary datasets to improve summary generation.

Columbia University, AI Model Share New York, USA
Graduate Machine Learning Researcher Aug 2022 – Dec 2022
- 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 Jul 2018 - 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%.
- Spearheaded 30+ projects to enhance Cisco product usability with containerized log analyzers, low-code and IaaC platforms.

PROJECTS

XProNet – Radiology Report Generation for Chest X Ray Images Sep 2022 - Dec 2022
- Analyzed and studied behavior of XProNet - a multi-modal deep learning model based on attention and prototype mechanism.
- Investigated mode collapse in generated medical reports based on radiology images, identified issues with XProNet training.
- Built inference pipeline with a pseudo-label generator for generating CheXBert labels based on radiology images.

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.
- 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.