Ashwin Sateesh Kumar

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EDUCATION

Northeastern University **Boston, MA**

Master of Science in Data Science ***(GPA: 3.9/4)*** **September 2021 – December 2023**

- ***Courses:*** *Machine Learning, Data Mining, Algorithms, Data Management and Processing, Deep Learning*

PES Institute of Technology **Bengaluru, India**

Bachelor of Engineering in Electronics and Communications ***(GPA: 8/10)*** **August 2015 - July 2019**

- ***Courses:*** *Linear Algebra, Artificial Neural Networks, Pattern Recognition, Image Processing, Signal Processing*

SKILLS

- **Programming Languages**: Python| R | MATLAB | SQL (SQLite, MySQL, NoSQL)
- **Frameworks and Libraries:** Scikit-Learn | TensorFlow | Keras | PyTorch | OpenCV | Pandas | NumPy| Matplotlib | NLTK | dplyr
- **Tools & Technologies:** Jupyter Notebooks| RStudio | Git | Tableau | IBM SPSS | MS Excel |Spark | Hadoop| AWS (Sagemaker) | GCP
- **Skills:** Statistical Analysis | Data Analysis | Visualization| Optimization| NLP | Computer Vision| Agile (Scrum, Jira, Confluence)
- **Certifications:** Deep Learning Specialization| AI Engineer Master's Program | Generative AI with LLMs

WORK EXPERIENCE

Research Assistant - *Khoury College of Computer Sciences* **July 2023 – Present | Boston, MA**

- Led the development of a multi-modal variational autoencoders (VAE) with convnets and transformers, effectively capturing complex image-text relationships in political social media (Instagram) data
- Implemented innovative latent space partitioning, segregating it into shared and private spaces for nuanced generative exploration, enabling robust image and text reconstruction, also facilitating disentangled representation learning
- Deployed the model on GCP with advanced loss functions akin to beta-TCVAE, achieving remarkable generative capabilities and results in generating images from text and vice versa with a 14% boost in processing, enhancing multi-modal data analysis workflows

Machine Learning Research and Development Intern - *Signify (Phillips Lighting*) **June 2022 – December 2022 | Boston, MA**

- Designed and integrated an AR-based system in Unity 3D, utilizing REST-API calls to activate dynamic shows on Phillips lighting devices, enhancing user interaction
- Enhanced household lighting scenes by forecasting patterns with SARIMAX, VARIMAX, and Xgboost models. Achieved 97% accuracy through hyperparameter tuning, significantly improving user satisfaction
- Provided growers with tailored lighting strategies for different plant cultivars, optimizing survivability and yield
- Demonstrated the potential of personalized lighting in smart homes, showcasing a User Re-Identification proof of concept with omniscale feature learning in the torchreid library to stakeholders

Graduate Teaching Assistant - *Khoury College of Computer Sciences* **September 2021 – April 2022 | Boston, MA**

- Collaborated with professor to develop assignments and facilitated office hours for 90+ graduate students in Machine Learning course (CS6140 and DA5030) and conducted thorough assessment of quizzes and assignments

Trainee Automotive Engineer - *KPIT Technologies Ltd* **July 2019 – November 2020 | Bengaluru, India**

- Engineered a custom U-Net-based semantic segmentation model for precise spatial detections in traffic scenes
- Enhanced annotation of 1 million images for a BMW Autonomous vehicle's deep learning model using Transfer Learning and Human-In-Loop methods
- Devised an object detection prototype of Vision and Radar Sensor Fusion for Advanced Driver Assistance System and deployed the model design in Simulink

PROJECTS

Video Speech Detection and Caption Generation **Feb 2023 - April 2023**

- Orchestrated end-to-end processing pipeline for MIRACL-VCI dataset: face detection, lip region extraction (Haar cascade), feature extraction (RESNET50/VGG16), and sequential modelling with attention-based LSTM and Transformers
- Successfully implemented a lip reading and the caption generation system utilizing the developed pipeline to achieve classification and text generation for words and phrases in the video frame with 91.3 percent accuracy

Pet Classification and Facial Recognition Model **Feb 2022 - April 2022**

- Constructed convolutional neural nets with VGGNet based architecture for classification of cats and dogs, and built a custom face detection model by applying bounding box augmentation to detect cats and dogs in real time with the help of YOLOv5

Amazon E-commerce Capstone Project **July 2021 - September 2021**

- Performed Sentiment analysis of Amazon customer reviews. Found main topics of the reviews using Latent Dirichlet Allocator (LDA), and reviewed text to build a product recommender system using collaborative filtering
- Generated word embeddings from Word2Vec and built a LSTM model to predict the sentiments of reviews and boosted the performance to 85 percent accuracy