Preetham Ganesh

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EDUCATION

Master of Science in Computer Science — August 2019 - May 2021
The University of Texas at Arlington — Arlington, TX

Bachelor of Technology in Computer Science and Engineering — July 2015 - April 2019
Amrita Vishwa Vidyapeetham — Coimbatore, India

EXPERIENCE

Graduate Student Researcher — February 2020 – May 2021
VLM Research Lab, University of Texas at Arlington — Arlington, TX

- Developed a proof-of-concept application for translating Sentence-based ASL to English language Speech under Prof. Vassilis Athitsos.
- Deployed 4 modules Video-to-Gloss, Gloss-to-Grapheme, Grapheme-to-Phoneme, and Phoneme-to-Spectrogram.
- Extracted Human & Hand Pose Keypoints from the videos, improved efficiency of it by converting models to PyTorch, and pre-processed it.
- Implemented Attention-based Seq2Seq & Transformer architectures for training all models & performed hyper-parameter tuning.
- Video-to-Gloss model achieved a state-of-the-art Top-5 accuracy of 98%. **Tech used**: TensorFlow, OpenCV, SpaCy, PyTorch. **Links:** [PDF, GitHub]

Undergraduate Student Researcher — June 2018 – July 2019
Amrita Vishwa Vidyapeetham — Coimbatore, India

- Built an application to predict rainfall in Indian Districts using district-wise location-based analysis under Prof. Dayanand Vinod.
- Modeled District & State level rainfall data using regression algorithms such as Decision Tree, Polynomial, Random Forest & XGBoost.
- Combined results using Stacking Ensemble method which achieved an EVS score of 91.1. **Tech used**: Scikit-Learn, NumPy. **Links:** [PDF, GitHub]

SKILLS

- **Languages**: Python, C, SQL, R, C++, Java
- **Frameworks & Tools**: TensorFlow, Keras, Scikit-Learn, NumPy, OpenCV, Pandas, Pickle, Matplotlib, SpaCy, SciPy, Flask, NLTK, Git, GitHub, AWS
- **Certifications**: Deeplearning.ai (2021), Google Data Analytics Professional Certificate (2021), MLOps Specialization Certificate

PUBLICATIONS & ACHIEVEMENTS

- POS Tagging-based Neural Machine Translation System for European Languages using Transformers: WSEAS (1st Author) — May 2021
- Personalized System for Human Gym Activity Recognition using an RGB Camera: PETRA (Scopus Indexed – 1st Author) — June 2020
- Estimation of Rainfall Quantity using Hybrid Ensemble Regression: ICACC (Scopus Indexed – 1st Author) — February 2020
- Forecast of Rainfall Quantity and its Variation using Environmental Features: IPACT (Scopus Indexed – 1st Author) — January 2020
- Recipient of the **Outstanding Student Award** by the Department of CSE: Amrita Vishwa Vidyapeetham — April 2019

ACADEMIC PROJECTS

POS Tagging-based Neural Machine Translation System for European Languages using Transformers — July 2020 - February 2021

- Built a production ready end-to-end application for translating text from European languages using inter-language word similarity approach.
- Performed Multi-threaded sentence preprocessing on multiple datasets and reduced processing time by 70%.
- Implemented Luong Attention-based Seq2Seq & Transformer networks & trained them. Utilized Flask for connecting models to webpage.
- Attained a METEOR score of 68.4 on the test set for EN-ES Transformer model. **Tech used**: TensorFlow, Multiprocessing. **Links**: [GitHub, Video]

Captioning of Images using Luong Attention — November 2020

- Developed a full-stack web application for predicting captions of an image given by the user and hosted the model on cloud.
- Pre-processed & tokenized captions using SentencePiece tokenizer. Used pre-trained InceptionV3 model to extract spatial features.
- Trained Attention-based Seq2Seq model which produced loss of 0.628 on test set. **Tech used**: TensorFlow, Flask. **Links**: [Video, GitHub]

Personalized System for Human Gym Activity Recognition using an RGB Camera — September 2019 - February 2020

- Led a team of 3 members to develop an android application to recognize gym activities & provide feedback on accuracy of joint movement.
- Attended weekly scrum meetings & communicated with members to integrate modules. Created a dataset from scratch & pre-processed it.
- Extracted keypoints, & used Random Forest to classify, which achieved an accuracy of 98%. **Tech used**: Scikit-Learn, OpenCV, NumPy. **Links**: [GitHub]

LEADERSHIP

Chairman — June 2018 - April 2019
ASCII Technical Club, Amrita Vishwa Vidyapeetham — Coimbatore, India