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Varun Belagali

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Work Experience

Research Engineer **Indian Institute of Science** **Sep 2021 – Aug 2022**

- Worked on image segmentation of glottal areas to help doctors track the progress of voice therapy. Implemented weakly supervised learning method in PyTorch to overcome challenges of data collection [1].
- Implemented air tissue boundary segmentation in MRI videos to aid the study of speech production. Analyzed the drawbacks of existing deep learning methods and designed the use of regional losses and metrics to improve segmentation accuracy by 28.5 %[2, 3]. Implementation was done using PyTorch, Matlab, and Keras.
- Developed lip-synced video generation from synthetic speech in PyTorch using open source techniques like Wav2Lip.

Software Engineer - Cloud **Citrix** **July 2020 – Sep 2021**

- Developed traffic manager tool in C# to handle cloud services during regional outages which improved time to mitigate by 20%.
- Analysed the usage of Azure by Citrix Cloud services and optimized the provision of VMs, Cosmosdb, etc. to reduce the cost by 65%.

Research Intern **Indian Institute of science** **June 2018 – May 2020**

- Designed CNN model in Keras and knowledge-based data augmentation method in Matlab to solve glottis segmentation task in strobosopic videos and achieved an improvement of 0.26 in Dice score [4].
- Created data annotation pipeline in Python for doctors to collect and label the stroboscopic videos of 18 patients.

Skills

- **Languages**: Python, Matlab, Java, C#, C.
- **ML libraries**: Keras, PyTorch, OpenCV, Scikit-learn, Numpy.
- **Technologies**: Azure, Jenkins, Splunk, NewRelic.

Education

Stony Brook, USA **Stony Brook University** **Aug 2022 – May 2024**

- M.S. in Computer Science.
- Coursework: Machine Learning, Computer Vision.

Bengaluru, India **R V College of Engineering** **Aug 2016 – Aug 2020**

- B.E. in Computer Science and Engineering, GPA: 9.22/10.
- Coursework: Operating Systems, Analysis of Algorithms, Neural Networks, Data Structures, Compilers.

Publications

1. Weakly supervised glottis segmentation using bounding box labels, submitted to **ICASSP 2023**[link].
2. An error correction scheme for improved air-tissue boundary in real-time MRI video for speech production, **ICASSP 2022** [link].
3. Air tissue boundary segmentation using regional loss in real-time Magnetic Resonance Imaging video for speech production, **INTERSPEECH 2022** [link].
4. Two step convolutional neural network for automatic glottis localization and segmentation in stroboscopic videos, **Biomedical Optics Express 2020** [link].
5. Spam Detection over Call Transcript using Deep Learning, **FTC 2021** [link].