Varun Belagali

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Work Experience

Research Assistant	**Stony Brook University**	**Sep 2022 – Present**

- Exploring the usage of implicit neural representations to efficiently train masked autoencoders (MAE). Our method: HyperMAE [1] needs approximately half the time or half the memory required by a vanilla MAE.
- Worked on improving diffusion-based visuomotor policy learning by using self-supervision [2]. Autoencoders as self-supervision led to significant performance improvement.

Research Associate	**Indian Institute of Science**	**Oct 2021 – July 2022**

- Designed a method for weakly supervised glottis segmentation in high-speed videoendoscopy using bounding box labels [3]. The method enhanced the segmentation quality by 20%.
- Analyzed the drawbacks of existing deep learning methods for air tissue boundary segmentation in rt-MRI videos. Designed the use of regional losses and metrics to improve segmentation accuracy by 28.5 %[4, 5].

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%. Led the cloud cost optimization project to reduce the cost by 65%.

Skills

- **Languages**: Python, Matlab, Java, C#, C, SQL.
- **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, GPA: 4/4.
- Pursuing Thesis in computer vision advised by Prof. Dimitris Samaras.
- Coursework: Machine Learning, Computer Vision, Robotics, Distributed Systems, Database Sytems.

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.

Research Papers

1. HyperMAE: Modulating Implicit Neural Representation for Efficient MAE Training, submitted to **WACV** 2024.
2. Crossway Diffusion: Improving Diffusion-based Visuomotor Policy via Self-supervised Learning, submitted to **CoRL** 2023.
3. Weakly supervised glottis segmentation using bounding box labels, **Interspeech** 2023[link].
4. An error correction scheme for improved air-tissue boundary in real-time MRI video for speech production, **ICASSP** 2022 [link].
5. Air tissue boundary segmentation using regional loss in real-time Magnetic Resonance Imaging video for speech production, **Interspeech** 2022 [link].
6. Two step convolutional neural network for automatic glottis localization and segmentation in stroboscopic videos, **Biomedical Optics Express** 2020 [link].