Vaishnav Potlapalli

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Education

New York University Courant Institute of Mathematical Sciencies **Sep. 2023 – Dec 2024**
Masters of Science in Computing, Entrepreneurship and Innovation GPA: 4.0/4.0 *New York City, NY*
***Relevant Courses**: LLVMs, Big Data and ML Systems, Foundations of Computer Networks*
***Honors**: M. Michael Waller Master's Fellowship*

Mahindra Ecole Centrale **Aug.2016 – May 2020**
Bachelor in Technology in Computer Science *Hyderabad, Telangana*

Publications

PromptIR: Prompting for All-in-One Blind Image Restoration **NeurIPS 2023**
***Vaishnav Potlapalli**, Syed Waqas Zamir, Salman Khan, Fahad Shahbaz Khan*
- Proposed an implicit prompt-learning based approach for All-in-One blind Image Restoration. Achieves SoTA performance on multiple image restoration tasks,without any prior degradation information.

Sketch3T: Test-Time Training for Zero-Shot SBIR **CVPR 2022**
*Aneeshan Sain, Ayan Kumar Bhunia, **Vaishnav Potlapalli**, Pinaki Nath Chowdhury, Tao Xiang, Yi-Zhe Song*
- Introduced a novel test-time training paradigm for zero-shot sketch-based image retrieval that adapts to new categories and sketch distributions using a single sketch, outperforming state-of-the-art methods.

MediTables IIIT **GREC 2021**
*Akshay Praveen Deshpande, **Vaishnav Potlapalli**,Ravi Kiran Sarvadevabhatla*
- Built a new dataset and semantic segmentation model for camera captured medical document images.

Experience

MBZ University of Artificial Intelligence **July 2022 – July 2023**
***Research Assitant - Computer Vision** (Advisor: Dr. Salman Khan)*
- Proposed and implemented a novel Visual transformer based prompt-learning framework for All-in-one blind Image Restoration / Enhancement called **PromptIR**,which achieved **SoTA** performance improving over previous methods by **0.9 dB** on dehazing, deraining and denoising benchmarks.Work presented as part of **Neurips 2023**
- Adapted computer vision based continual learning techniques **L2P**, **DualPrompt** methods for video action recognition improving performance over previous techniques by over **10%** accuracy and **14% BWF**, on several public benchmarks.
- Studied parameter-efficient finetuning techniques to improve downstream performance of **Multimodel LLM models**.

Dhan AI **April 2020 – April 2022**
Machine learning Engineer
- Developed an ensemble of **BERT-based Classifiers** to enhance the NER engine, resulting in a **12% accuracy** improvement in internal benchmarks on entity recognition and sentiment classification, significantly improving the primary product of the company, which was a Patient Life Cycle Managment Chatbot.
- Optimized model serving API using **Nvidia TensorRT**, increasing the model throughput by **25%**, enabling close to realtime performance for the chatbot, across the customer organization.
- Rewrote the application testing pipeline to utilize increased **parallelism and Redis cache** to reduce CI/CD time by **60%** that enabled rapid development of new features.

Centre For Vision, Speech and Signal Processing, University of Surrey **May 2021 – Nov 2021**
***Remote Research Collaborator - Computer Vision** (Advisor: Dr. Yi-Zhe Song)*
- Designed and implemented a new Zero-shot Sketch Based Image Retrieval method, that uses Meta-learning and test-time training to outperform prior methods by **0.17 mAP** on standard benchmarks. Work presented as part of **CVPR 2022**

Projects

ROBOMUSE- Mobile robot platform | *ROS, OpenCV, PyTorch, C++, Python* **September 2019 – January 2020**
- Developed an autonomous robot's vision system, implementing **stereo calibration algorithms** with custom stereo cameras for depth imaging. Optimized **YOLO** and **SSD** for advanced object recognition in **RGBD** images.

PhysioLive: Virtual Assistant for Physio Therapy | *Django, Tensorflow, C++, Python* **May 2018 – August 2018**
- Created an app leveraging human pose estimation with **CMU Openpose** to correct patient postures in physiotherapy. Developed the backend with Django. Secured **1st place** among 34 teams at the Novartis MedTech Hackathon

Technical Skills

Computer Vision: OpenCV, SLAM, Object Detection, Semantic Segmentation, Image Restoration, GAN, VAE, CNN, ViT
Languages: Python, Java, C/C++, CUDA,HTML/CSS, JavaScript, TypeScript,SQL
Technologies/Frameworks: Pytorch, Tensorflow,Transformers,TensorRT, ,OpenCV, Numpy, SciPy,Django, Docker, MySQL