Sumanth R Hegde

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EDUCATION

- **M.S. in Computer Science, University of California, San Diego** *Sep 2021 - Mar 2024*
  GPA: 4.0 | **Coursework**: Recommender Systems & Web Mining, Design & Analysis of Algorithms, Principles of Database Systems, Supply Chain Analytics | **Teaching Assistant:** Mathematics for Algorithms, Principles of Database Systems
- **B.Tech(Hons.), Electrical Engineering, Indian Institute of Technology(IIT) Madras** *Aug 2017 - Jul 2021*
  CGPA: 9.76/10 | Department Rank: 1/53 (Gold medalist)
  Coursework: Pattern Recognition and Machine Learning, Deep Learning, Estimation Theory, Convex Optimization

TECHNICAL SKILLS

Languages : Python, C++, SQL, R, MATLAB
Frameworks/Tools : Pytorch, Numpy, Pandas, Tensorflow, Scikit-learn, Keras, OpenCV, Docker, Git

INTERNSHIPS

- **HyperVerge Technologies Pvt. Ltd.** | Tensorflow, Python, C++ *May 2019 - Jul 2019*
  Computer Vision Intern
  - Implemented a learning-based face detection algorithm for Know-Your-Customer services, reduced false positives 10 times and false negatives by 2.5 times on HyperVerge's benchmark.
  - Trained a Multi-task Cascaded Convolutional Neural Network using $>$ 200,000 images to beat the previous model which had $>$99.5% accuracy.
  - Analysed client data and employed hard positive mining, data augmentation to improve recall by 5% .

PUBLICATION

Sundar, Varun*, Sumanth Hegde*, Divya Kothandaraman, and Kaushik Mitra. "Deep Atrous Guided Filter for Image Restoration in Under Display Cameras". In: *Computer Vision - ECCV 2020 Workshops*. Springer International Publishing, 2020, 379-397.

PROJECTS

- **Supply Chain Analytics** | Pandas, Numpy *Jun 2022 - Sep 2022*
  - Analysed time series data for a bakery, compared forecasting models like moving average and Holt's method.
  - Explored different supply chain distribution networks for minimizing inventory and transportation costs.
- **Rating Prediction for Google Local Reviews** | Pytorch, Surprise *Nov 2021 - Dec 2021*
  - Built a prediction engine using collaborative filtering to predict the user rating for a business and achieved an MSE of 0.877 on the Google Local Reviews dataset.
  - Investigated the performance of factorization machines, latent factor models and decision trees.
- **High-Speed Video Reconstruction using Lensless Cameras** | Pytorch, Numpy *Oct 2020 - Aug 2021*
  B.Tech Thesis under Prof. Kaushik Mitra, IIT Madras
  - Demonstrated fast reconstruction of a 12 frame video from a single image of a lensless camera, reducing inference time from 2 hours to 30 milliseconds.
  - Proposed an efficient reconstruction framework - a physics-aware neural net trained in an adversarial fashion, used feature-based loss for producing photorealistic videos.
- **Megapixel Image Restoration for Under-Display Cameras** | Pytorch, OpenCV *May 2020 - Jul 2020*
  Student Researcher under Prof. Kaushik Mitra, IIT Madras
  - Created a novel deep learning based model for image restoration, resulting in a publication at ECCV Workshops 2020 and placed 2^{nd} /150 teams at the Under Display Camera Challenge. [Presentation]
  - Developed a two stage pipeline for directly processing megapixel images with a simulation scheme for data augmentation.
  - Rectified severe blur and low light conditions in the images, obtaining $>$12% improvement in image quality with 88% (7.8M) lesser parameters than existing work. [Paper] [Website]
- **Low-Resource Satellite Image Segmentation** | Keras, OpenCV *Oct 2018 - Dec 2018*
  Inter IIT Tech Meet 2018
  - Achieved image segmentation of satellite images into 8 classes with an average accuracy of 96.27%, and placed 4^{th} in Inter IIT Tech Meet 2018.
  - Executed a mix of classical computer vision and deep learning methods with only 14 images for training.
  - Implemented U-net based architectures and employed hard mining for under-represented classes. [Code]

* Equal Contribution