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Yashasvi Baweja

Research Engineer / Applied Scientist

Portfolio: yashasvi97.github.io
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I'm a machine learning researcher interested in working on domain specific projects that create impact. I'm looking for opportunities that involve both research and development component.

Skills

Tools and Languages	Python, Git, LaTeX, MarkDown, Bash, C/C++, HTML, Vim, SLURM
Deep Learning Research	PyTorch, Tensorflow, NumPy, pandas, IPython, OpenCV, Tensorboard
Communication	English, Hindi (fluent speaker), Punjabi (listening)

Experience

Graduate Researcher / Face Anti-Spoofing **Aug 2019 — May 2021**
Vision(ECE) Lab, JHU *Baltimore, MD*

- Addressed challenge of detecting spoofs in face authentication videos by deploying one class neural networks.
- Proposed a CNN training framework with only real face data while detecting spoofs as anomalies.
- Attained 6% reduction in error rate for four publicly available datasets. Published research at IJCB, 2020
- Extended research to incorporate local information in videos by employing vision Transformers

Undergraduate Researcher & Developer / Periocular Recognition **Aug 2017 — May 2019**
Image Analysis & Biometrics Lab, IIITD *New Delhi, India*

- Developed a novel loss for training CNNs in presence of data from different modalities
- Extended Triplet Loss by adding two branches(spectrum/resolution) to account for heterogeneity
- Achieved State-of-the-art for periocular recognition and published research at BTAS, 2018

Internships

Research Intern / fMRI super-resolution **May 2021 — Sep 2021**
Neuro-Radiology, Johns Hopkins Medicine *Baltimore, MD*

- Enhanced activation maps for fMRI brain scans using Convolutional Neural Networks(CNNs)
- Trained UNet(ResNet-34) architecture across cross platform (CPU/GPU) nodes using PyTorch
- Achieved 20% gain in PSNR values over nearest-neighbor approach. Abstract submitted to RSNA

Software Developer / Personalised greeting system **May 2018 — Sep 2018**
Infosys Center for AI, IIITD *New Delhi, India*

- Led R&D team in building face recognition system for Yamaha Research(Japan)
- Shipped final product deliverable ready for deployment in golf carts for personalized greetings

Research & Development Intern / Landslide prediction system **May 2017 — Sep 2017**
IIT Mandi *Mandi, India*

- Built the first landslide prediction prototype at IIT Mandi using Arduino microcontroller
- A decision tree based model predicted the probability of landslide at logging location
- Compared multiple class-imbalance mitigation techniques for the task of landslide prediction

Education

Doctor of Philosophy in Electrical & Computer Engineering, *Johns Hopkins University* 2019 — Present
Graduate Student Fellowship, ECE department- JHU 2019 — 2020
Master of Science in Electrical & Computer Engineering, *Johns Hopkins University* May 2022
Bachelor of Technology in Computer Science, *Indraprastha Institute of Information Technology, Delhi* May 2019
Teaching assistant: Computer Vision, Systems Management 2018, 2019

Publications

1. **Anomaly detection-based unknown face presentation attack detection**, **Y. Baweja**, P. Oza, P. Perera & V. M. Patel; at *International Joint Conference on Biometrics(IJCB), 2020*
2. **Heterogeneity aware deep embedding for mobile periocular recognition**, R. Garg*, **Y. Baweja***, S. Ghosh, R. Singh, M. Vatsa & N. Ratha; at *Biometrics: Theory, Applications and Systems(BTAS), 2018*
3. **Comparison of Class Imbalance Techniques for Real-World Landslide Predictions**, K. Agrawal, **Y. Baweja**, (+8 authors) & V. Dutt; at *International Conference on Machine Learning and Data Science(ICLMDS), 2017*

Activities

Reviewer for IEEE Transactions on Image Processing 2022 — Present