Yashasvi Baweja

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Education

2015 - Present **Indraprastha Institute of Information Technology (IIIT), Delhi, India**
B.Tech, Computer Science and Engineering - CGPA: 8.37/10.0

Coursework Image Analysis*, Andvanced Machine Learning*, Computer Vision, Artificial Intelligence, Statistical Machine Learning, Linear Algebra, Collaborative Filtering, Advanced Programming

[*=Ongoing]

2015 **Gyan Bharati School, New Delhi, India**
Senior Secondary School (12th Grade) - Percentage: 95%

2013 **Gyan Bharati School, New Delhi, India**
High School (10th Grade) - GPA: 9.6/10

Bachelor Thesis ***Heterogeneous Biometric Recognition***
Advisers: Dr. Richa Singh and Dr. Mayank Vatsa

May'17- Present · Working jointly on the problem of matching images from different domains(E.g. VIS gallery to NIR probe or High Resolution gallery to Low resolution probes).
· Proposed a deep metric loss function on the lines of Triplet Loss to include heterogeneity.
· The proposed loss metric can be used for producing a heterogeneity invariant embedding space, where embeddings of the same identity are closer to each other irrespective of the domain variation.
· Currently working on disentangling the factor of variation in the features to improve cross-domain image matching performance.

Experience

May'18 - July'18 **Research Intern** - Center for Artificial Intelligence, **New Delhi**
Advisers: Dr. Richa Singh and Dr. Mayank Vatsa
· Built a face recognition tool for a project funded by Yamaha Research, Japan.
· Explored various score fusion techniques to enhance context information in video frames.

Aug'18 - Present **Teaching Assistant - IIIT Delhi**
Teaching Assistant for Systems Management Course, Monsoon Semester 2018

May'17 - July'17 **Research Intern - Indian Institute of Technology (IIT), Mandi**
Adviser: Dr. Varun Dutt
· Made landslide prediction models for Mandi-Manali route by applying random forests, SVMs and neural networks.
· Used oversampling techniques like SMOTE, SMOTE-ipf to reduce class imbalance in landslide datasets.
· Developed an Arduino based landslide monitoring weather station which is currently in deployment.

June'16 - July'16 **Summer Intern - VlinkInfo Pvt. Ltd., Gurgaon, India**
Worked on revamping a human resource management platform using tools like PHP, Codeigniter, MySQL.

Skills

Software PyTorch, TensorFlow, Keras, OpenCV, scikit-learn, Linux
Tools MATLAB, Arduino, Eclipse, LaTeX, Git
Languages Python, C, C++, Java

Publications

2018 *Heterogeneity Aware Deep Embedding for Mobile Periocular Recognition*
Rishabh Garg*, **Yashasvi Baweja***, Soumyadeep Ghosh, Mayank Vatsa, Richa Singh and Nalini Ratha.
*IEEE International Conference on Biometrics: Theory, Applications and Systems, (**BTAS**) 2018, Los Angeles, U.S.A*
[*=Equal Contribution]
[presentation]

2017 *A Comparison of Class Imbalance Techniques for Real-World Landslide Predictions*
Kapil Agrawal, **Yashasvi Baweja**, Deepti Dwivedi, Ritwik Saha, Prabhakar Prasad, Shubham Agarwal, Sunil Kapoor, Pratik Chaturvedi, Naresh Mali, Venkata Uday Kala and Varun Dutt.
*IEEE International Conference on Machine Learning and Data Science, (**ICMLDS**) 2017, Noida, India*
[paper], [presentation]

Projects

Aug'18 - Present ***Deep Matrix Factorization for Single Cell Epigenomic data***
Working on the cell target interaction problem using matrix factorization techniques to fill up the sparse cell-target matrix.

Aug'18 - Present ***Understanding Capsulenets***
Working on incorporating Capsulenets for faces for a better understanding. Looking for faster routing techniques to improve training time.

Aug'18 - Present ***Image Segmentation using Contours, Surfaces and Depth Information***
Working on implementing the voting mechanism proposed by Fu et. al [1] for the course project of Image Analysis.

Jan'18 - April'18 ***Binary Segmentation of animal images***
A semi-supervised approach to segment the forest images of animals into foreground and background. This reduces the search space for finding the animal only in the foreground. [Slides]

Jan'18 - April'18 ***Automatic Music Generation***
Worked on modelling polyphonic piano data using Hidden Markov Models(HMMs) and compared it's performance with deep learning methods (RNNs) for automatic music generation. [Report]

Jan'16 - April'16 ***Smart Glasses***
A reading tool for the visually impaired made using OpenCV and Tesseract-OCR along with a feature of recognizing acquaintances. Got selected in top 10 course projects and also got featured in Delhi-Mini Maker Faire. [Blog], [Code]

May'17 - June'17 ***Periocular Recognition***
A recognition system for the periocular region I made to get started with biometrics and image processing. Recognized person on the basis of fusioned score of feature matching with LBPs, HOGs & SIFT. [Code]

Aug'17 - Dec'17 ***Multi Heuristic A* (MHA*)***
As a part of the AI course project, compared the performances of search algorithms - MHA* and A* on tile sliding problem, graph traversal(n=400 nodes) and finding the best way for a bus tour in the city. [Code]

All projects available at yashasvi97.github.io/projects.html

Recognition

· Selected for Google Intern Connect Program, India. One of the 250 selected from a pool of 100K+ applicants.
· Received recognition letter from MHRD for outstanding performance in class XII examination in 2015.
· Bronze Medal in Manav Sthali National Maths Olympiad, India in 2014.