Yash Sanjay Bhalgat

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EDUCATION

University of Michigan, Ann Arbor, MI **Dec '18 (expected)**
Masters, Computer Science and Engineering
- **GPA**: 3.89/4.0

Indian Institute of Technology, Bombay, **2013-2017**
B.Tech. with Honors in Electrical Engineering and *Minor* in Computer Science
- **GPA**: 9.44/10.0

RELEVANT COURSES Machine Learning, High Performance Scientific Computing, Advanced Computer Vision, Digital Image Processing, Matrix Computations, Design and Analysis of Algorithms, Data Structures and Algorithms, Probability and Data Analysis, Microarchitecture, Complex Analysis, Calculus

Research

PUBLICATIONS

- **Teacher-Student Learning Paradigm for Tri-training: An Efficient Method for Unlabeled Data Exploitation** *Yash Bhalgat*, Zhe Liu, et. al., *AAAI 2019* (submitted)
- **Iris Classification Using Scattering Wavelet Network: An application to De-duplication** P. Birajadar, *Yash Bhalgat*, Vikram Gadre, *International Journal of Biometrics* (submitted)
- **CatsEyes: Categorizing seismic structures with scattering wavelet networks** *Yash Bhalgat*, Laurent Duval, Jean Charlety, *ICASSP 2018* [link] [Poster]
- **A Scattering Wavelet Network based approach to Fingerprint Classification**, P. Birajadar, *Yash Bhalgat*, Vikram Gadre, *Pattern Recognition Letters* (attempting rebuttal)
- **Stamp Processing with Examplar Features** *Yash Bhalgat*, Mandar Kulkarni, Shirish Karande, Sachin Lodha, *DAS 2016* [arxiv]

PROGRAMMING

- ***Languages:*** (proficiency: high to low) Python, C++, MATLAB, Java, Verilog, R, Julia, Bash
- ***Packages:*** PyTorch, Keras, Theano, TensorFlow, OpenCV, CUDA, python-flask, git

INTERNSHIPS

IBM Almaden Research Center, CA *[Summer '18]*
Classification in the presence of label noise in training data
Built deep learning and ensemble frameworks to integrate weakly-labelled and high-quality training samples. Proposed a task-agnostic method for the exploitation of unlabeled data.

IFPEN, Paris, *Mentor - Laurent Duval* *[Summer '17]*
Categorization of seismic structures with scattering wavelet networks
Work accepted as a paper at ICASSP 2018. Proposed a method to give deformation invariant features of geophysical images using an unsupervised deep network, followed by feature selection.

Undergraduate Thesis, IIT Bombay, *Guide: Prof. Vikram Gadre* *[Jul '16 - Apr '17]*
[THESIS] Scattering Wavelet Network based approach to Fingerprint Classification
Developed better than state-of-art algorithms for Fingerprint classification and Iris recognition, submitted to Pattern Recognition Journal and International Journal of Biometrics respectively.

IBM RESEARCH, Bangalore *[Summer '16]*
Joint multi-modal representations for e-commerce catalog search by visual attributes
Used autoencoder based CorrNets to learn the joint representation for images and captions.

TATA RESEARCH DESIGN AND DEVELOPMENT CENTER, Pune *[Dec '15]*
Object recognition in document images with semisupervised deep learning [arXiv]
Work submitted to DAS conference. Detection accuracy 94% and segmentation IoU 74.81%.

INFURNIA, Mumbai *[Summer '15]*
Software module development using CAD modelling engine
Created a range of constraint-modules by modifying functions in FreeCAD in Python and C++.

FOCUS ANALYTICS, Mumbai *[Dec '14]*
Indoor Navigation System - Pedometry
Developed a pedometry-based indoor navigation Android application accurate to 1-1.5 meters.

MARS SOCEITY OF INDIA, IIT Bombay *[Aug '14-Mar '15]*
Navigation System Design - University Rover Challenge, Utah
Worked in the Navigation & Vision subsystem on Robotic Operating System (ROS), aimed to build a semi-autonomous prototype of a Mars rover. Used A-star algorithm for video-guided nav.

Academic Experience

KEY COURSE PROJECTS

- **Convolutional Neural Network from scratch**, Advanced Computer Vision [github]
- **Exploring machine-learning ranking systems on the Yelp dataset**, Information Retrieval
- **Sarcasm detection in sentences**, Machine Learning (CS 725) [github]
- **Segmentation of MRI images using Expectation Maximization**, Estimation and Identification
- **Computer Vision and Image Processing algorithms acceleration with CUDA**, High Performance Scientific Computing [github]
- **Emotion from Speech extraction (CNNs, HMMs)**, DSP Poster presentation [github]
- **Automated Stellarium Laser Pointing device**, Electronic Design Lab [youtube-demo]

Miscellaneous

SCHOLASTIC ACHIEVEMENTS

- All India Rank **12** in IITJEE-Mains exam among 1.5 million students
- All India Rank **155** in IITJEE-Advanced exam among 0.15 million students
- All India Rank (AIR) **60** in KVPY Scholarship by Govt. of India among 0.2 million candidates
- Featured in National Top 30 for the International Astronomy Olympiad, 2013
- Among top 300 in India to compete in the Physics, Chemistry and Mathematics olympiads.
- Awarded Cargill Global Scholarship 2014-15 and selected in the 10-member Indian cohort to represent at the global seminar in Minneapolis, USA in 2016
- Winner of IMATATHON - Image Processing Hackathon held by Electronics Club, IIT Bombay

TEACHING EXPERIENCE

At University of Michigan - Ann Arbor
Graduate Student Instructor, Computational Data Science *Fall '18*
Graduate Student Instructor, Introduction to Logic Design *Winter '18*
At Indian Institute of Technology, Bombay
Teaching Assistant, Wavelets *Fall '16, Winter '17*
Teaching Assistant, Quantum Mechanics and Applications *Winter '15, Fall '15*