Yash Sanjay Bhalgat **13D070014**
Electrical Engineering **B.Tech.**
Indian Institute of Technology Bombay **Male**
DOB: 14/10/1995

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2017	9.44
Intermediate/+2	Maharashtra State Board	P.Jog Junior College, Pune	2013	93.60
Matriculation	Maharashtra State Board	De Paul English Medium School, Rahuri Factory	2011	91.70

Pursuing a **Minor in Computer Science** and **Honors in Electrical Engineering** *[Jul '14 – Present]*

SCHOLASTIC ACHIEVEMENTS

- Selected amongst the **top 10** students in the country as a **Cargill Global Scholar** 2014-15 for excellence in leadership and academics. Also part of the Indian cohort at the global seminar in Minneapolis, 2016
- **All India Rank (**AIR**) 12** in **IITJEE-mains** 2013 and **AIR 155** in **JEE-advanced** 2013 examination
- Awarded the prestigious **KVPY** scholarship with **AIR 60 (**All India Rank**)** in 2012
- Selected among the **top 40 students** of India for the Orientation cum Selection camp (OCSC) for the **International Astronomy Olympiad** - 2013
- Selected among top 300 of the nation to compete in all three Olympiads: **INPhO, INChO** and **INAO** in 2013 and **INMO (**Indian National Mathematics Olympiad) in 2011
- Awarded a "**Visharad**"(~BA degree) in **Tabla** by Akhil Bhartiya Gandharva Mahavidyalaya in 2011
- Completed **5** Grades/Levels in **Piano** approved by the Trinity College of Music, London
- Winner of the IMATATHON – **Image Processing Hackathon** held by Electronics Club, IIT Bombay
- Achieved perfect Grade Point of **10** (CPI/GPA) in my **4th semester** at IIT Bombay

WORK EXPERIENCE AND PROJECTS

Object recognition in document images using semi-supervised Deep Learning *[Dec '15]*

Tata Research Development & Design Center (TRDDC)

Guide and Co-authors: Dr. Shirish Karande, Dr. Sachin Lodha, Mandar Kulkarni

- Work translated to a paper as first author at 12th IAPR workshop on Document Analysis and Systems (DAS) 2016 in Santorini, Greece titled "Stamp processing with examplar features"
- With specific recognition to stamp detection - segmentation, the approach performs better than many competing approaches: K-SVD, Gabor filters and other deep learning techniques
- Stamp detection accuracy of 94% and segmentation **IoU (**Intersection over Union**)** of 75%

Joint multi-modal representations for e-commerce catalog search by visual attributes

IBM Research, Bangalore – *Guide: Amrita Saha, Mitesh Khapra* *[May '16 - Jul '16]*

- Use of "CorrNets" based model to learn the joint representation for both the image and corresponding description such that *the two representations are embedded in the same space as close as possible*
- Used the BVLC Reference CaffeNet for images and standard one-hot reps for the query space to train the CorrNets using SGD, adadelta and rmsprop optimizations
- Results showed this is a viable alternative for searching large fashion catalogs without manual tagging

Print/color based analysis for cognitive fashion trend prediction *[May '16 - Jul '16]*

IBM Research, Bangalore – *Guide: Dr. Vikas Raykar, Amrita Saha*

- Use of "convolutional autoencoders" for representing the prints (eg. printed, plaid, polka dot, etc.) in an apparel, trained so that similar looking patterns are closely placed in the kernel space
- Extracting dominant print in the apparel using clustering on the obtained reps from the trained model

Software module development using CAD modelling engine *[May '15 - Jul '15]*

Infurnia, Summer intern

- Created a range of 'constraint-modules' for building furniture parts using the FreeCAD package
- Modified functions in FreeCAD for direct use without affecting backward compatibility

Indoor Navigation System – Pedometry *[December '14]*

Focus Analytics, Winter intern

- Developed and tested a pedometer application for mobile phones to incorporate it into an "Indoor Navigation System" with a final accuracy of **1-1.5 meters**
- Work involved in processing data from mobile phone "inertial" sensors, noise reduction, developing various pedometry algorithms, testing them on real-time data
- Algorithms implementing in Python including Triad algorithm, STFT, FFT for heading estimation

Mars Society – University Rover Challenge *[Aug '14 – Mar '15]*

Organized by Mars Society, Utah, United States

- General development of a "semi-autonomous" Mars Rover with the Mars Society of India
- Worked in the Image processing subsystem for vision-guided navigation of the rover

KEY COURSE PROJECTS

1. **Image Processing algorithms acceleration using CUDA,** High Performance Scientific Computing
2. **Emotion from Speech extraction (models - CNNs, HMMs),** DSP Poster presentation
3. **Object Recognition using Convolutional Neural Networks,** Digital Image Processing
4. **Automated Stellarium Laser Pointing device,** Electronic Design Lab
5. **Photo plethysmograph prototype,** Analog Systems Lab
6. **Wireless Mobile Charger,** Analog Systems Lab

B. TECH. PROJECT (BTP)

Wavelets based Image processing for Biometric Applications *[Jul '16 – Present]*

Guide: Prof. Vikram Gadre

- Developing methods for touchless fingerprint recognition and creating matching systems for the same
- Use of wavelets and other image processing techniques for deformation-free acquisition

POSITIONS OF RESPONSIBILITY (POR)

Undergrad Teaching Assistant - Quantum Mechanics and Application *[Fall '14], [Summer '15]*

- Assisted and guided a batch of 50 first year students as a Tutor in this course for 2 semesters
- Besides weekly sessions, setting and evaluating of quizzes, conducted extra sessions for students needing special attention

RELEVANT SKILLS

Programming Languages:	C, C++, Python, Bash, Java, Verilog, (Basic) R
Software packages / libs:	Theano, Tensor Flow, OpenCV, PRAAT, CUDA, MPI, MATLAB, git
Misc:	ROS (Robot Operating System), GNU/Linux

RELEVANT COURSES

Computer Vision, Speech Processing*, High Performance Scientific Computing, Digital Image Processing, Design and Analysis of Algorithms, Wavelets**, Estimation and Identification*, Matrix Computations, VLSI CAD, Probability and Data Analysis, Network Theory, Calculus, Complex Analysis, Microprocessors

*being done this semester **this and next semester as a part of the BTP

EXTRACURRICULAR

- Author to the Electronics Club blog on "Training neural nets to classify images using deep learning"
- Performed in various fests and competitions like ROOTs, Battle of Bands, Surbahaar, etc.
- Skilled in beatboxing and playing other instruments like Piano and Harmonica (still learning)