Ankit Agrawal

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2010–2015 (expected)	**B.Tech and M.Tech in Electrical Engineering**, *Indian Institute of Technology*, Bombay. Masters specialization in Communication and Signal Processing

Professional Experience

May–Jul '14 University of Trento, Italy, Junior Research Intern, Remote Sensing Lab.
- Applied various Unsupervised Feature Learning and Deep Learning techniques for land cover classification of multispectral remote sensing satellite images in Matlab, Python and C
- Experimenting with different deep architectures like **Convolutional Neural Network** and **Stacked Auto-encoders** to improve classification accuracy beyond 85% by continuing it as my Dual Degree project

May–Sep '13 Google Summer of Code 2013, Contract Developer, scikit-image, Python Software Foundation.
- Implemented various Feature Detection algorithms like CenSure and FAST corner detector and Feature Description algorithms like BRIEF, ORB and FREAK in Python and Cython in the image processing library scikit-image
- Finished the programme successfully with positive reviews from mentors; made **10,000+ lines** of code changes

May–Jul '13 Nanyang Technological University, Singapore, Summer Intern, COSMIC Lab.
- Worked on Classification and Decision Fusion of community sourced geotagged images to create a geographical heatmap that locates the Dengue and Malaria hotspots in a city
- Used **Support Vector Machine on Vector Quantized SIFT features** in Python and C++ to probabilistically classify the image as a potential mosquito breeding site

Key Projects

Oct–Nov '13 Accelerometer Biometric Competition, Kaggle.com, *Machine Learning*.
Finished **18th out of 633** teams in this competition that involved the identification of a user given the smartphone accelerometer data. Used good feature engineering exploiting the leakage features to achieve ROC of 96.9

Oct–Nov '14 Forecasting of Oil Prices using Wavelets, *Wavelets*.
Computed Wavelet decomposition of time-series using Daub8 wavelet; interpolated series by spline fitting. Forecasted oil prices with 81% correlation by Wavelet reconstruction using PyWavelets library in iPython

Aug–Nov '13 Speech Digit Recognition System, *Speech Processing*.
Constructed a codebook using **k-means clustering** from training data to recognize 10 spoken digits by real cepstral coefficients. Achieved 90% accuracy on the test dataset

Aug '13 Konnactivity, *Yahoo! HACKU 2013*.
Won **Hacker's Choice Award** for developing a web application in a team of four that enables users to discover people with similar interests by applying NLP on their Facebook Likes, Quora and Yahoo Answers activity at the 24 hour hackathon

Mar–Apr '13 Search Engine Features, *Information Retrieval*.
Implemented search engine features like **Query auto-completion, similar query prediction and spell checking**. Trained over 20 million queries collected from 650 thousand users by AOL search engine to build the system

2013–Present Open Source Contributions, ⌨ankit-maverick.
Fixed bugs, added new features and improved documentation in libraries like **scikit-learn, scipy, sympy, SimpleCV** etc.

Publications

1. 'Detection of potential mosquito breeding sites based on community sourced geotagged images', Ankit Agrawal; et. al., Proceedings SPIE 9089, Geospatial InfoFusion and Video Analytics IV, 2014
2. 'scikit-image: image processing in Python', van der Walt, Stefan; et. al., PeerJ, 2014 (1), art. no. e453

Computer skills

Languages	Python, C++, C, MATLAB, Java, SQL, Ruby, PHP, Verilog HDL, HTML, CSS, Javascript
Tools	Linux, Android, Git, Django, Flask, OpenCV, OpenGL, numpy-scipy, scikit-learn, matplotlib, D3js, LaTeX

Extra-Curriculars

2014–2015	Teaching Assistant for Advanced Computing for Electrical Engineers and Wireless and Mobile Communication
2013–Present	Learning Languages and Traveling; beginner in German, Italian, Mandarin; been to 16 countries in Asia, Europe
2011–2012	Finished **1st among 24 teams** in Business Simulation Game and secured **3rd position** among 300+ participants in Virtual Stock Market by E-Cell 2012 and E-Cell 2011, IIT Bombay respectively