

CHIRAG NAGPAL

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EDUCATION

University of Pune, India <i>Bachelor of Engineering (Computer Engineering), 6th Semester</i> Overall Percentage: 81% (WES CGPA: 3.9/4), First Position in Department	2012 - 2016
Delhi Public School, Jaipur <i>CBSE, Class XII</i> (Physics, Chemistry, Mathematics, Multimedia and Web Technology) Percentage: 94% , Second Position in Class	2010 - 2012
St. Joseph's Convent School, Pathankot <i>CBSE, Class X</i> (Science, Mathematics and English) GPA: 10	2008 - 2010

SCHOLASTIC ACHIEVEMENTS

- IET Scholarship Award, West Zone Winner, 2014 (Awarded to Top 5 students across India)
- Science Academies' Summer Research Fellowship, 2014 at IISc, Bangalore
- Sir Ratan Tata Memorial Scholarship, for standing 1st in Computer Department, 2014 & 2013.
- Merit Scholarships by Indian Army for excellence in academics in the years 2014, 2013, 2012 & 2010.
- Selected for INSPIRE, Innovation in Science Pursuit for Inspired Research program, Rajasthan University, 2010.

INTERNSHIPS AND RESEARCH

Carnegie Mellon Univeristy <i>IPTSE Winter School 2014 at NIT Karnataka, Surathkal</i>	Dec 2014
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- Guide: **Prof. Bhiksha Raj & Prof. Rita Singh**, Carnegie Mellon University
- Project: **'What impact does an image generate on social media?'**.
- Applied Kernel Density Estimation to analyse seasonal variation in geo tagged Flickr images.
- Worked on ARMA models to predict growth of comments and ads in Flickr.
- Carried out sentiment analysis of comments stream using Naive Bayes classifier trained on movie reviews.
- Extracted Topical Models from image tags using Latent Dirichlet Allocation.

Indian Institute of Science, Bangalore <i>Winter Research Intern, Supercomputer Education and Research Center</i>	Nov 2014
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- Guide: **Padmashree Prof. N. Balakrishnan**, Associate Director, Indian Institute of Science
- Project: **'Density based clustering of Topically Modelled Microblogs'**.
- Developed an extension to DBSCAN using a gaussian and sigmoid relation to improve geospatial clustering.
- Entire code was parallelized using python multiprocessing and run on a 32 core mainframe with linear scale-up.

Indian Institute of Science, Bangalore <i>Science Academies' Summer Research Fellow, Supercomputer Education and Research Center</i>	May - July 2014
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- Guide: **Padmashree Prof. N. Balakrishnan**, Associate Director, Indian Institute of Science
- Project: **'Application of Machine Learning Techniques for Twitter User Classification'**.
- Developed Python scripts for Tweet mining using Twitter REST and Streaming API.
- Utilised NLTK and SciKit to implement algorithms like Decision Trees, Naive Bayes and SVMs on features like discription, followers, friends.
- Presented results to Hon'ble Governor of Andhra Pradesh and Telangana, **Shri. E.S.L Narasimhan**.

Netaji Subhas Institute of Technology, New Delhi <i>Student Mentor, Texas Instruments Centre For Embedded Product Design</i>	Dec 2013 - Jan 2014
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- Guide: **Prof. DV Gadre**, Associate Professor, NSIT, New Delhi
- Mentored undergraduate students from leading universities in India on TI Microcontrollers.
- Trained students on software packages, CadSoft EAGLE and TI Code Composer Studio.
- Guided students with embedded system projects on TI MSP430 and ARM Cortex M4.

PROJECTS

Exploring the Language of Likes in Facebook

Sep - Oct 2014

- Developed Python scripts to extract 'likes' from Facebook user profiles and pages using the Graph API.
- Utilised networkx python to generate massive graphs from stored data.
- Utilised Gephi to generate visualisations using OpenOrd, Yifan Hu, Force Atlas etc. algorithms.

Spatio-Topical Modelling of Tweets from India

Aug - Sep 2014

- Utilised 'R' packages, 'tm' and 'topicmodels' to carry out topical categorisation of a corpus of over 400,000 geo-located tweets by applying Latent Dirichlet Allocation.
- Topic wise visualisations of tweets were generated using package 'mapdata'
- Currently, implementing a fuzzy geographical clustering algorithm based on DBSCAN for topical clustering.

Wireless Environment Sensing Network with IoT extension

Mar - Apr 2014

ARM Cortex A8 (BeagleBone Black), MSP430

- Developed an environment sensing node with LM35, DHT11, LDR interfaced to MSP430 and XBee.
- Coordinator node was developed on ARM A8 based BeagleBone Black serving as an Internet of Things server.
- Frontend was developed as a webpage, served by coordinator using processing.js with backend in Python.
- Work was featured on leading electronics blog, **Hack A Day**, **Dangerous Prototypes**, **Official MSP430 Blog** and stood 1st in 'Amalgam' college project competition, 2014

GPIO Access Through Linux User Space

Nov - Dec 2013

ARM Cortex A8 (BeagleBone Black)

- Implemented a novel technique of GPIO access using the Linux mmap() system function and /dev/mem.
- Studied the architecture of the TI AM3359 ARM A8 Controller with special regard to GPIO addressing.
- Achieved a GPIO toggle rate of over 2MHz as compared to the standard 3kHz speed.
- Work was featured on leading electronics blog, **Hack A Day**.

Complete details of other projects at www.chiragnagpal.com/projects.html

TECHNICAL SKILLS

Programming Languages	C/C++, Python, Java, Shell Scripting, R, Latex, Qt, Processing
Platforms	x86, Arduino, MSP430, ARM Cortex M4, ARM Cortex A8
Operating Systems	Unix, Linux, Embedded Linux, Windows
Tools	NLTK, WEKA, EAGLE, Eclipse IDE, Xilinx ISE, GIMP

PUBLICATIONS

- Reviewed 'Getting Started with Electronic Projects' by Bill Pretty, *PACKT Publishers*, UK ISBN: 9781783554515
- **C. Nagpal**, K. Singhal, 'Twitter User Classification Using Ambient Tweet Metadata', Arxiv

OUTREACH

Have been featured multiple times on leading websites, links below:

- <http://hackaday.com/2014/04/06/hackaday-links-april-6-2014/>
- <http://dangerousprototypes.com/2014/03/31/beaglebone-black-and-msp430-based-wireless-sensing/>
- <http://hackaday.com/2013/12/07/speeding-up-beaglebone-black-gpio-a-thousand-times/>
- <http://dangerousprototypes.com/2013/12/18/laser-pointer-controlled-with-a-pc-mouse/01111>

AWARDS AND ACHIEVEMENTS

- 1st position in 'Amalgam', alumni sponsored project competition, AIT Pune, 2014
- Selected for MIT Media Lab DIY Workshop, India, 2014 (could not attend due to University Exams)
- All India Rank 5, 'National Creativity Aptitude Test', 2013
- All India Rank 41, National Defence Academy Services Selection Board, 2012 conducted by UPSC.

EXTRA CURRICULAR

- Founder of the AIT Big Data Initiative, tutored juniors in Web Scraping and Revision Control.
- Student Member, IEEE
- Qualified Amateur Station Operator (HAM Radio) Call Sign VU2CND
- Attended workshop on 'Creativity and Achievement Motivation' at IIT, Delhi after qualifying NCAT, 2013.
- Board Member, College Magazine, 'Srijna' and Team Member of College Quiz and Debate Club.
- Hobbies include Horse Riding, Swimming, Basketball & Golf.