

CHIRAG NAGPAL

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EDUCATION

- University of Pune, India** 2012 - 2016
Bachelor of Engineering (Computer Engineering), 5th Semester
Overall Percentage: 80.5% , **First** Position in Department
- Delhi Public School, Jaipur** 2010 - 2012
AISSCE (CBSE, Class XII)
Physics, Chemistry, Mathematics, Multimedia and Web Technology
Percentage: 94% , **Second** Position in Class
- St. Joseph's Convent School, Pathankot** 2008 - 2010
AISSE (CBSE, Class X)
Science, Mathematics and English
GPA: 10

EXPERIENCE

- Indian Institute of Science, Bangalore** May - July 2014
Science Academies' Summer Research Fellow, Supercomputer Education and Research Center
- Guide: **Padmashree Prof. N. Balakrishnan**, Associate Director, Indian Institute of Science
 - Project: '**Application of Machine Learning Techniques for Twitter User Classification**'.
- Netaji Subhas Institute of Technology, New Delhi** Dec 2013 - Jan 2014
Student Mentor, Texas Instruments Centre For Embedded Product Design
- 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

- 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.
- Extending DBSCAN to Cluster Density Specific Regions** Sep 2014
- Implemented a modified DBSCAN algorithm in Python with a new input parameter *Max Points*.
 - Algorithm was tested on dataset from CHAMELEON. Cluster visualisations were generated with Matplotlib.
- Application of Machine Learning Techniques for Twitter User Classification** May - July 2014
Research Project at SERC, Indian Institute of Science
- 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.
 - Trained classifiers to classify Twitter accounts into Users, Organisations & Celebrities and Music, Sports & Politics.
 - Presented results to Hon'ble Governor of Andhra Pradesh and Telangana, **Shri. E.S.L Narasimhan**.
- 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**.

Mobile Camera Robot

Sep - Oct 2013

ARM Cortex A8 (BeagleBone Black)

- Implemented a Web Server using LIGHTTPD and Wi-Fi with static IP on ARM Cortex A8 running Linux.
- Established a 640x480 resolution video stream from a webcam through a simple PHP based web page.
- Interfaced an HMC5883 Magnetometer using I²C, and L293DNE Motor Driver for direction & control.

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

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- Currently reviewing ‘BeagleBone Electronic Projects’, PACKT Publishers, Birmingham, UK (In Press)
 - **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

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- IET Scholarship Award, West Zone Winner, 2014 (Awarded to Top 5 students across India)
 - Selected for Science Academies’ Summer Research Fellowship, 2014 at IISc, Bangalore
 - 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)
 - 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.
 - All India Rank 5, ‘National Creativity Aptitude Test’, 2013
 - All India Rank 41, National Defence Academy Services Selection Board, 2012 conducted by UPSC.
 - Selected for INSPIRE, Innovation in Science Pursuit for Inspired Research program, Rajasthan University, 2010.

EXTRA CURRICULAR

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- Student Member, IEEE
 - Qualified Amateur Station Operator’s Certificate Exam (HAM Radio)
 - Open Source enthusiast and contributed to the Angstrom Linux.
 - 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.