

# CHIRAG NAGPAL

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## EDUCATION

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- University of Pune, India** 2012 - 2016  
*Bachelor of Engineering (Computer Engineering)*  
Courses: Digital Electronics, Data Structures, Microprocessor Architecture, Computer Organisation, Microprocessor Interfacing Techniques, Mathematics - I, II, III  
Overall Percentage: 81% GPA: 3.98/4.00 (upto 3<sup>rd</sup> semester)  
First Class With Distinction, 1<sup>st</sup> Position in College
- Delhi Public School, Jaipur** 2010 - 2012  
*AISSCE (CBSE, Class XII)*  
Physics, Chemistry, Mathematics, Multimedia and Web Technology  
Percentage: 94%
- St. Joseph's Convent School, Pathankot** 2008 - 2010  
*AISSE (CBSE, Class X)*  
Science, Mathematics and English  
GPA: 10

## EXPERIENCE

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- Netaji Subhas Institute of Technology, New Delhi** Dec 2013 - Jan 2014  
*Mentor, Texas Instruments Centre For Embedded Product Design*
- Professionally mentored second and third year students from leading universities in India on Texas Instruments ICs and Microcontrollers.
  - Trained students on software packages like CadSoft EAGLE, TI Code Composer Studio.
  - Guided students with embedded system projects on TI MSP430 and ARM Cortex M4.
- Indian Institute of Technology, Delhi** July 2013
- Attended a workshop on 'Creativity and Innovation' after qualifying the National Creativity Aptitude Test.
  - Aim was to develop creative thinking and enhance achievement motivation.

## PROJECTS

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- 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 as an Internet of Things server.
  - Frontend was developed as a webpage, served by coordinator using processing.js with backend for RS232 protocol implemented in Python.
  - Work was featured on leading electronics blog, **Hack A Day** and **Dangerous Prototypes** and stood 1<sup>st</sup> in 'Amalgam' college project competition, 2014  
<http://hackaday.com/2014/04/06/hackaday-links-april-6-2014/>  
<http://dangerousprototypes.com/2014/03/31/beaglebone-black-and-msp430-based-wireless-sensing/>
- GPIO Access Through Linux User Space** Nov - Dec 2014  
*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**.  
<http://hackaday.com/2013/12/07/speeding-up-beaglebone-black-gpio-a-thousand-times/>

## PC controlled Laser Pointer

Dec 2013

*ATmega328 (Arduino)*

- Interfaced servo motors to the ATmega328 (Arduino) using PWM signals.
- Established RS-232 serial communication between PC and Atmega328.
- Wrote a Linux compatible Python script to read mouse coordinates and send them using serial over USB.
- Work was featured on leading electronics blog, **Dangerous Prototypes**.  
<http://dangerousprototypes.com/2013/12/18/laser-pointer-controlled-with-a-pc-mouse/01111>

## 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 Angstrom Linux.
- Established a 640x480 resolution video stream from a webcam through a simple PHP based web page.
- Interfaced an HMC5883 Magnetometer using I<sup>2</sup>C, and L293DNE Motor Driver for direction & control.

## Morse Code Generator

Jun - Jul 2013

*TI MSP430*

- Designed the PCB on CadSoft EAGLE, and developed it using Toner-Transfer method.
- Interfaced legacy PS/2 Keyboard, 16x2 Character LCD to the MSP430.
- Utilised the TI Code Composer Studio to program the controller in Embedded C.

## TECHNICAL SKILLS

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

## ONLINE COURSEWORK

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### Johns Hopkins University

Jan - Feb 2013

*Computing for Data Analysis*

- Grade: 71/100
- Programming in R, creating data graphics, writing functions and creating R packages.

## AWARDS AND ACHIEVEMENTS

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- 1<sup>st</sup> 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 1<sup>st</sup> in Computer Department, 2013.
- Merit Scholarships by Indian Army for excellence in academics in the years 2013, 2012 & 2010.
- National level, 5<sup>th</sup> Position, 'National Creativity Aptitude Test', 2013
- Ranked among top 1.7% students in AIEEE, 2012.
- Winner Intra-College 'India Quiz', 2012.
- Selected for INSPIRE (Innovation in Science Pursuit for Inspired Research) program at University of Rajasthan, 2010.

## EXTRA CURRICULAR

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- Open Source enthusiast and contributed to the Angstrom Distribution of Linux for Embedded Devices via GitHub.
- Board Member, College Magazine, 'Srijna'.
- Team Member of College Quiz and Debate Club.
- Hobbies include Horse Riding & Swimming.