

# SIDDHARTH SHARMA

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## EDUCATION

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**University of Delhi, Netaji Subhas Institute of Technology (NSIT)**

June 2014

Bachelor of Engineering

Division of Instrumentation and Control Engineering

Overall Percentage: 62.48 %

(after dropping 12 credits as per provision of University of Delhi): 62.89 %

Bachelor's Thesis Project: Implementing Speaker Recognition Using Student's t-Mixture Modeling

BTP Score: 80.00%

## TECHNICAL SKILLS

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### Programming

C/C++, Python, MATLAB, VHDL, Processing, L<sup>A</sup>T<sub>E</sub>X

### Software Tools

EagleCAD, PSpice, Cadence Virtuoso, LabVIEW

### Hardware

Arduino, Raspberry Pi, pcDuino, Atmel AVR, ARM Cortex M3 (with TI StellarisWare),  
PCB Design, Oscilloscopes

### Operating Systems

Linux (Ubuntu and Raspbian), Windows

## INTERNSHIPS AND RESEARCH POSITIONS

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**Viterbi School of Engineering, University of Southern California**

June 2013 - August 2013

*Summer Intern*

*Los Angeles, CA*

- Worked in the BioRC research group led by Dr. Alice C. Parker in the Ming Hsieh School of Electrical Engineering. The target of the research group is to mimic the human brain's neural structure through analog VLSI and nanotechnology
- Within the BioRC group, involved with the C.Elegans project team with target to mimic the neural structure of C.Elegans worm. To implement this, developed software and algorithms to automate the synthesis of analog neural network circuits
- Presented poster titled "Automatic Neuromorphic Circuit Connection Software" on the same at Ming Hsieh School of Electrical Engineering

**mLabs Research**

September 2012 - May 2013

*Research Intern*

*New Delhi, IN*

- Designed Arduino and Raspberry Pi based circuits, integrating devices like tft-touch display, wifi-module, DACs and analog switch matrix micro-chips by employing bus communication protocols like SPI and I2C. Involved in designing multi-layer PCBs
- Developed modules for memristor characterization using arduino
- Worked in the three-person prototype development team of Bit-by-Bit (B3): a product that enables everyone to design their own hardware and 'internet of things', collaboratively and over the cloud, and is now supported by Microsoft Ventures in London. The product employs the same hardware architecture we designed

**Centre for Electronics Development and Technology (CEDT), NSIT**

December 2011 - July 2012

*Student*

*New Delhi, IN*

- Attended lectures on Embedded Systems Design and Computer Architecture conducted by professor D.V. Gadre, Division of Electronics and Communication Engineering, NSIT
- Attended workshop on Using Arduino in Embedded Systems projects and PCB Design and Fabrication
- Was involved in various hardware projects. Details given in the 'Projects Undertaken' section

**Bosch Chassis Systems, Gurgaon Plant**

June 2011 - July 2011

*Summer Trainee*

*New Delhi, IN*

- Worked on project titled "Implementation of Poka-Yoke Using Electronic Sensors". Designed and implemented a panel for Poka-Yoke on a riveting machine in the drum-brake house in the manufacturing plant
- Wrote a review paper with the same title that won First Position (cash prize of Rupees 5000) at Kriti: Paper Presentation Competition during Innovision 2012, the annual technical fest of Netaji Subhas Institute of Technology

- Learned about the various manufacturing processes employed in the plant. Learned about various quality assurance techniques like Poka-Yoke and Six-Sigma and how they are employed in the manufacturing plant
- Attended a two-day workshop on Introduction to Programmable Logic Controllers (PLCs) conducted by visiting engineer from Siemens, Italy

## PROJECTS UNDERTAKEN

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### **Continuing Research with Dr. Smriti Srivastava** *NSIT*

August 2014 - Present

- Currently working on building a Raspberry Pi based standalone device to implement the Solar Position Algorithm (SPA) developed by NREL, U.S. Department of Energy. The device will make SPA calculations like solar zenith angle and solar azimuth angle at remote locations

### **Bachelor's Thesis Project: Implementing speaker recognition using Student's t-Mixture Model**

*Mentor: Dr. Smriti Srivastava, Dean, Undergraduate Studies, NSIT*

*January 2014 - June 2014*

- Developed a robust, text independent speaker recognition system modelled on Student's t-mixtures. Defended thesis in front of panel of faculty members of Division of Instrumentation and Control Engineering, NSIT

### **"Pac-Man" on Digital Storage Oscilloscope**

July 2012

*Laboratory: CEDT, NSIT*

- Developed single player "Pac-Man" on a Digital Storage Oscilloscope (DSO) as part of Atmel Oscilloscope Design Challenge, Centre for Electronic Development and Technology, NSIT, New Delhi
- Established Graphic Display in X-Y mode of DSO using two R-2R ladder network circuit based Digital to Analog Converter and Gameplay through a basic controller interfaced by Arduino

### **Non-Invasive Heart Rate Monitor**

April 2012 - June 2012

*Laboratory: CEDT, NSIT*

- Developed the heart-rate monitor using IR sensor by employing the principles of Plethysmography. Displayed ECG graph using Processing

### **"Snake" game on an 8x8 LED Matrix**

March 2012

*Laboratory: CEDT, NSIT*

- Played through a basic controller interfaced with Arduino

### **PCB Design and Fabrication**

December 2011

*Laboratory: CEDT, NSIT*

- Designed and fabricated the PCB for a 5VDC voltage-regulated power supply with maximum current drive of 1A using EagleCAD
- Provided fold-back current limiting for short-circuit protection

## LEADERSHIP EXPERIENCE

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### **Crescendo - Music Society of NSIT**

June 2012 - May 2013

*President*

- Previously an inactive society, brought significant improvement in activity and presence. Appointed an administrative core team of 6 members out of a total of over 50 members in the society
- Successful organization of Crescendo Eve in September, 2012, with 15 musical performances of varied genres by society members. Crescendo Eve is now an annual event at NSIT
- Successful stint at Rendezvous 2013, Annual Cultural Fest of IIT - Delhi, with 2nd position in Solo Western Vocals, 3rd position in Solo Instrumentals and participation in Group Western Vocals

## EXTRA-CURRICULAR ACTIVITIES

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- Playing the bass guitar. Familiar with musical staff notation
- Member of College Basketball Team during first two years of college