Siddharth Buddhiraju   100110013

Electrical Engineering   **UG Third Year(Dual Degree)**

Indian Institute of Technology, Bombay   Male

Specialization: Microelectronics   **DOB: 19 April 1992**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2012	9.81
Intermediate/+2	CBSE	Kendriya Vidyalaya, IIT Powai	2010	95.80
Matriculation	CBSE	Kendriya Vidyalaya, IIT Powai	2008	97.60

Scholastic Achievements

- Secured **Institute Rank 1** in a batch of over 800 students in first year at the Indian Institute of Technology, Bombay in the academic year 2010-2011.
- Secured **All India Rank 8** in the AISSCE (XII grade) examination conducted by CBSE in 2010.
- Secured **All India Rank 5** in the AISSE (X grade) examination conducted by CBSE in 2008.
- Secured **National Rank 2** in the 36th Jawaharlal Nehru Science Quiz and **National Rank 3** in the 37th Jawaharlal Nehru National Science Quiz, representing Kendriya Vidyalaya IIT Powai.
- Awarded a merit certificate for being the **National Top 1%** in the National Standard Examination in Physics 2009-2010. Qualified for the prestigious Indian National Physics Olympiad in the year 2010.
- Secured **All India Rank 70** in the National Level Science Talent Search Examination conducted in 2009.

Software Skills

- Have good knowledge of and can program in **C++, Python** and **HTML+PHP.**
- Have in-depth knowledge of a wide variety of **Free and Open Source Software (FOSS),** in particular, **Scilab, Sage** and **GCC.** Well versed with **MySQL.**

Projects Undertaken

- Worked with **Dr. Josiane Zerubia** at **INRIA, Sophia-Antipolis, France** on statistical image segmentation techniques using **Markov Random Fields,** and developed software for parameter estimation for Bootstrapped EM and ICE techniques. Extended the model successfully to multispectral images. Paper under preparation for submission to refereed international journal.

  o **Abstract:** In the techniques extended and worked on, a parametric model for a multispectral image assuming a linear combination of multivariate Gaussians is constructed and its parameters estimated using **Bootstrapped EM** and **Iterated Conditional Expectation (ICE)** methods. Further, **simulated annealing** is used to converge to the optimal segmentation. The method is found very effective on several real satellite images.

- Developed a novel algorithm for automatic **extraction of road segments** from high resolution satellite images using **kernel based segmentation** and local spectral and geometric criteria. Paper submitted to **ICVGIP 2012** (under review).
  - o **Abstract:** Extraction of roads from satellite remotely sensed images plays an important role in domains such as Map Updation and Intelligent Transport Systems. This paper presents a novel algorithm to perform road network extraction using a mean shift segmentation approach followed by a cost optimization step based on a region following grid graph. Experiments on several high resolution satellite images have established the capability of the proposed method.

- Working on a Resistance RAM (RRAM) engineering project, guided by Prof. Udayan Ganguly at IIT Bombay. [In progress]
  - o **Abstract:** The project aims at modelling resistance switching characteristics in complex metal oxides (like $La_xSr_{1-x}MnO_3$). It involves ionic drift/diffusion and electronic quantum transport model development for quantitative explanation of the resistance switching mechanism.

Relevant Courses (up to December 2012)

- Courses in Mathematics such as **Calculus, Linear Algebra, Differential Equations, and Complex Analysis.**

- Pursuing a **minor** in Mathematics. Courses include **Real Analysis, General Topology, Measure Theory, Fourier Analysis and applications,** and **Basic Algebra**. The minor will be completed in 2013.

- Curriculum related courses such as **Network Theory, Electronic Devices, Analog Circuits, Digital Systems, Signals and Systems**, **Power Electronics, Physics of Nano-scale Devices** and **Quantum Mechanics.**

Extracurricular Achievements

- Attained a **Black Belt** Degree 1 in Goju-Ryu style **karate**, awarded by the Nihonsiki Karate and Sports Federation.

- Qualified for and participated in the National Level of the MaRRS International **Spelling Bee 2008**, securing the **first rank** in the school and regional levels of the same.

- Qualified for and participated in the tennis tournament in the **KVS Regional Sports Meet**, representing Kendriya Vidyalaya, IIT Powai.

- Worked with **Seva Sahayog Foundation**, an NGO based in Mumbai, for collection of funds for providing **school kits** to children in rural and tribal areas.

- Was a coordinator for **Mood Indigo 2011** (Marketing).