
EDUCATION**DELHI TECHNOLOGICAL UNIVERSITY**

New Delhi, India

Bachelors of Technology (B. Tech): *Electronics and Communication*

July 2016

- Aggregate CGPA till 4th semester: 54.32%
- GPA in 5th semester: 78%
- GPA in 6th semester: 79%
- Batch highest: 85%

UNIVERSITY OF CALIFORNIA, BERKELEY

California, USA

Summer School

June 14- Aug 14

- *Academics:* Studied finance and urban economics and secured B- and A- grades respectively.
- *Research:* Assisted my Urban Economics professor with his PhD thesis titled "Impact of Airports on Local Economy"
- Letter of recommendation from my urban economics professor can be provided upon demand

AMITY INTERNATIONAL SCHOOL

Noida, India

12th Grade and 10th Grade Pass Certificate (C.B.S.E: Central Board of Secondary Education)

May 2011

- 82.8% in 12th Grade Board Examination: Physics, Mathematics, Chemistry and English
- 97.4% in 10th Grade Board Examination. (ranked 3rd in NCR region)

INTERNSHIP**Mechartes (Winter Intern)**

October 14 – January 15

I worked directly under the CEO, Mr. Shishir Gupta. I was part of a team that was working on a new micro-controller technology that can be adapted into modern day home comfort appliances and make them smarter and more energy efficient. The home automation network will have internet connectivity and will be able to collect data from its surroundings via sensors.

My task was to design an electronic lock that uses a biometric reader that scans your finger print and, based on identity verification, grants you entry. I was given the lead to work on a design for an electronic finger-print based solenoid lock. I constructed and designed equations that formed the structure of the lock. A detailed report on the project can be made available upon request.

TECHNICAL SKILLS & RESEARCH**Vedic Maths/Number Theory and Combinatorics:**

November 14 - Present

- I have **invented a new Vedic Math technique of multiplying numbers by 9** and have written a paper on it which is in the process of being published in "Mathematics Magazine", affiliated by the Mathematics Association of America. **Vedic Maths Organisation has already published the above mentioned paper in their newsletter.**
- I have written an article on divisibility tests of all prime numbers till 100. The method described in the article is not available online in an accessible format to the public. I have elucidated and generalized the method and have modelled an algorithm in MATLAB in order to computerize it. I have written a paper titled, "*Algorithm for testing and computing divisibility of prime and composite numbers in MATLAB without the use of inbuilt functions*" where I explain the method and the novelty which I introduce in the form of generality which I bring to the method. My algorithm also has some add on features and capabilities. If a lot of divisibility by some number had to be done these tests would be quite effective. **My article has been published as a paper in an online journal by Vedic Maths Organisation.**
- I am doing research under Dr. Arthur Benjamin of Harvey Mudd College in Number Theory and Combinatorics. My method of multiplying numbers by 9 is being included in his upcoming book. Currently, I am trying to use combinatorial analysis to establish proofs for fibonomial coefficients.

Analog Filter Technology (Research Assistant)

September 14 - Present

I am doing research under Dr. Neeta Pandey at Delhi Technological University, New Delhi in the field of analog filters where I am conducting novel and extensive work on Operational Trans Resistance Amplifiers. OTRA's provide considerable advantages that are not seen in op-amps. Some of them are unbounded gain-bandwidth product, zero parasitic capacitances due to components and optimum slew rate. What I am trying to achieve is to change the way the entire analog world is perceived in that the most basic building block of all circuits, the operational amplifier, will be replaced by a more efficient and advanced block which would rewrite all the analog circuit books in the field.

- A notch filter is a band stop filter that allows all frequencies to pass through except for a particular specified frequency band centred at a fixed given frequency. My first project was to design a novel bainter notch filter which I did by modifying the circuit diagram using three OTRA's and derived a transfer function. I next used this function to implement a novel circuit in PSPICE. I simulated the circuit using values calculated from a given set of design equations. My output gain vs frequency plot is exactly the same as the circuit using op-amps which gives credence to the fact that I have implemented a novel bainter notch filter circuit using OTRA. My results prove that a bainter notch filter circuit can be designed using OTRA and is an implication for the future that more efficient, and better filters with numerous more advantages can be fabricated. My circuit design has also been selected by my university for a possible patent ship.
- My next task was to extend the success of the bainter circuit to the twin-T notch filter. I repeated the same steps wherein I modified the circuit diagram and implemented the novel circuit in PSPICE. As before, my output gain vs frequency plot is exactly the same as the circuit using op-amps which proves the development of a twin-T notch filter circuit. **This project earned me the second highest marks (175/200) in my project course at DTU in a batch of 195 students, the highest being 180/200.**
- I designed a novel OTRA based second order delay equalizer and wrote a research paper on this. Presented the paper at a national conference by IEEE and **won 2nd prize for Best Paper Presentation Award out of a total of 80 research papers.**

I have **written two research papers** in this field which have been communicated and are in process of publication.

INDEPENDENT COURSES TAKEN**Programming:**

- Stanford: CS106a- Programming Methodology (JAVA)
- Stanford: CS106b- Programming abstractions (C++)

Machine learning:

- Machine Learning course on Coursera taken by Dr. Andrew Ng.

MISCELLANEOUS SKILLS & ACHIEVEMENTS

Academic:

- Lightening calculator: Ability to mentally compute simple arithmetic operations in my mind within a few seconds.
- Recognized by CBSE as **top 0.1%** of all successful class 10 board exam candidates nationally; interviewed on national television; ranked **3rd in all of national Capital Region (NCR)**
- At the age of 18, gave the *All India Engineering Entrance Exam* for entrance to the top engineering schools in India and was placed **5938** out of **one million** students.
- Participated and represented India in the 3rd **International Young Mathematicians Convention** in Lucknow, 2008 winning **silver** medal individually and **bronze** medal for team.
- **Scholarship winner** for excellent academics for **6 consecutive years** during middle school and high school.
- Proficient in German, holder of **highest proficiency in German award for 3 consecutive years** on the basis of which was selected to go to Germany on a student exchange program in 2009 **out of 200 students**
- Participated in the college level Texas Instruments Analog Maker Competition. I and my team **cleared the first round at 3rd position.**

Chess:

High School Team captain, College Branch Team Captain, College Team vice Captain

New Delhi

2006 - Present

- Selected to play against international grandmasters like Parimarjan Negi and Kateryna Lahno.
- Secured 4th and 5th position in consecutive years in District level tournaments.
- Ranked 91 out of 500 players at state level. (2014)
- Represented my branch in the inter-branch sports festival of college (ARENA) and was placed 4th two years in a row.
- Represented my college in the chess tournament of Odyssey 2015 at IIIT Delhi and placed 18th out of 150 participants.
- Ranked 53 out of 500 players at state level. (2015)

REFERENCES

Reference	Relationship	Time
Dr. Neeta Pandey	Academic adviser, mentor, teacher At Delhi Technological University	3 years
Marquise J. McGraw	Instructor at UC Berkeley	Summer