ROHIT AGRAWAL

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EDUCATION

B.Tech. Electrical Engineering – CGPA 9.10/10.00 (3.64/4.00) *Expected 2015*
Indian Institute of Technology Kanpur, India

Class XII, CBSE – 93.67% *2010*
R.S.M. Senior Secondary School, Gorakhpur, India

Class X, CBSE – 91.67% *2008*
R.S.M. Senior Secondary School, Gorakhpur, India

AWARDS & ACHIEVEMENTS

- Won **1st prize** in **Embedded** (made a **Labyrinth Maze Game**) in **Techkriti'13**, Annual technical festival of IIT Kanpur.
- Won **1st prize** in **Electromania** (made a **Tachometer**) in **Techkriti'12**, Annual technical festival of IIT Kanpur.
- Secured **All India Rank 395** in IIT-JEE 2011 among over 0.5 million applicants.
- Secured **All India Rank 975** in AIEEE 2011 among 1.3 million applicants.
- Secured **6th Rank** (99.99 percentile) in UPSEE 2011.
- **Merit Certificate from CBSE** for getting highest marks in **Physics** in Class XII (2011).
- **Merit Certificate from The State Government of Uttar Pradesh** for getting full marks in Physics in Class XII (2011).
- **Amul Vidya Bhushan Award** for excellent performance in Class XII (2011).

RESEARCH INTERESTS

- Computer Architecture
- Digital Circuits and Microprocessor Design
- VLSI Design

TECHNICAL SKILLS

Programming: C, C++, Java, HTML, Verilog, VHDL
Platforms/Softwares: Windows, Linux, MATLAB, Xilinx ISE, GNU Octave, SPICE, Eclipse, AVR Studio, Code Vision AVR, Mathematica, AutoCAD, Autodesk Inventor

PROJECTS

Terrain Classification for planetary rovers using step response of current controlled PMDC motors
Mentored by Prof. R. Potluri, Dept. of EE, IIT Kanpur *May-Sept 2013*

- Proposed a method to **classify the terrain for planetary rovers** by analyzing the **tangential** component of wheel-terrain interaction forces as compared to the traditional sensor based classification.
- As the load torque experienced by the wheel will be different for different surfaces, we get **unique vibrational spectrum** for different surfaces.
- Using current controlled PMDC motors, **step inputs were applied to the motors**.
- The results were **positive** on three surfaces- **sand, clay & cemented floor**, showing clear differences in the response.

DOA estimation for Uniform Circular Array

Under Course EE301A, mentored by Prof R.M. Hegde and Mr. Lalan Kumar (PhD Student) *Feb'14-April'14*

- Implemented the **PM-Root-Music Algorithm** for uniform circular array for **DOA estimation** when number of elements in UCA is small.
- Implemented the **beamspace DOA algorithm** based on **Manifold Separation Technique** (MST) and **Propagator Method** (PM).
- Implementation was based on the original work done by Jie Pan & Jianjing Zhou.

Labyrinth Maze Game

Independent project for Techkriti'13, IIT Kanpur *March 2013*

- Made a **Labyrinth Maze Game** using **ATmega32 microcontroller** which can be played using **motion sensing**.
- Used **Reverse Backtracking Algorithm** to generate random mazes and game could be played with **multiples balls**.
- **Dynamic Changes** in the maze during game was implemented.

Wirelessly Controlled Wrestling Bot *Jan 2013*

Independent project for Techfest'13, IIT Bombay

- Made a **wirelessly controlled bot** (15cm*15cm) capable of moving by **hand gestures**.
- Used **xbee module** for communication between the bot and the controller.
- Hand gestures are detected by the **6DOF accelerometer** and processed in **Mbed microcontroller** while processing on the bot is done using **arduino**.
- Had to move the opponent's bot out of the arena by only using **defensive mechanisms**.

USB Slingshot *May-July 2012*

Summer project in Electronics Club, IIT Kanpur

- A **plug-n-play USB controller** in the shape of a slingshot to play the game '**Angry Birds**'.
- Used **Mbed microcontroller** for processing and a **6 DOF accelerometer** for motion detection.
- The controller can also perform various **mouse functions**.

Tachometer

Independent Project for Techkriti'12, IIT Kanpur *Jan 2012*

- Made a **Tachometer** using AVR based **Atmega-16 microcontroller** and **TSOP IR sensor**
- Measured **rpm** of a motor along with its **sense of rotation**.

RELEVANT COURSES

- Architecture of Microprocessors & Microcontrollers**
- Integrated Circuit Fabrication Technology**
- Microelectronics II*
- Microelectronics I
- Data Structure & Algorithms
- Introduction to Electronics
- Power Systems
- Introduction to Electrical Engineering (Motors)
- Signals, Systems & Networks
- Probability & Statistics
- Fundamental of Computing (C language)
- Analog/Digital VLSI Circuits**
- Digital Electronics & Microprocessor Theory
- Computer Networks**
- Communication Systems*
- Principles of Communications
- Electromagnetic Theory*
- Digital Signal Processing*
- Control Systems Analysis
- Fourier Analysis & Differential Equations
- Complex Analysis & Linear Algebra
- Multivariable Calculus

** Courses to be completed by Apr'14*

*** Courses to be completed by Dec'14*

Extra Curricular Activities

Manager, ECDC-Techkriti'14, Annual Technical & Entrepreneurship Festival of IIT Kanpur *Sept'13-Mar'14*

- Led a **3 tier team** to to plan and execute the **biggest college level electronics competition in India**.
- Designed and implemented problem statements for **4 competitions** in the event.
- Managed the event with a budget of about **2 lacs.**
- Witnessed around **500 participants** in the event.

Executive, Science & Technology Council IIT Kanpur *Mar'13-Mar'14*

- Successfully conducted the 40 days long **summer camp** for freshmen by working in a team of 7 executives and coordinators 8 club/hobby groups.
- **Supervised and evaluated** various projects made by the freshmen during the summer camp.
- Introduced **SnT blog** to make the campus residents aware of latest updates and happenings in the science & technology world.
- Was part of the organizing team of the **Inter-Hostel Technical Festival of IIT Kanpur, Takneek**.

Student Guide, Institute Counselling Service *July'12-present*

- Helped a group of 6 freshmen to assimilate into the environment and culture of IIT Kanpur during their initial days.
- Worked with about 130 students to successfully conduct the 5 days long orientation programme for freshmen.
- Providing academic, financial and emotional assistance to those 6 freshmen.

Secretary, Radio Club IIT Kanpur *Mar'12-Mar'13*

- Organized Hall level workshops and worked in a team to conduct different competitions on the **IITK Community Radio**.
- Worked in a team to successfully conduct the **Radio Jockey Workshop** during May 2012.
- Spoke on the Community Radio of the institute for different events and video projects.

Academic Mentor, Esc 101A *Jan'12-April'12*

- Mentored 2 of my batch mates in Esc101A (Fundamentals of Computing) to help them better understand the course.
- Worked in a team of 5 students to design regular assignments and notes.