Udit Jalan

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Gender: Male
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EDUCATION

Year	Examination	University	Performance
2009-present	Graduation	IIT Bombay	**9.91**/10 (after 5 semesters)
2009	Intermediate / +2	Maharashtra State Board	92.5%
2007	Matriculation	Council for Indian School Certificate Examination (ICSE)	97.57%

RESEARCH INTERESTS

- Digital and Analog Integrated Circuit Design
  VLSI Design, VLSI System Design
- Embedded System Design
- Biomedical Instrumentation
- Digital Communications
  Coding Theory, Information Theory, Wireless communications

SCHOLASTIC ACHIEVEMENTS

- **Institute Rank 1**(out of around 800 students across all Departments) (2011)
- One of the 2 students selected from IIT-Bombay to give a Seminar at the **Indo-German Winter School** in the field of **High Performance Computing** (2011)
- **Only student from IIT Bombay** and among the 3 students from India invited to the ITCSC Winter School on **Information Theory** by the **Chinese University of Hong Kong**. (2011)
- Selected for pursuing Undergraduate Research at the Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research(**TIFR)** under the **National Initiative on Undergraduate Science** (NIUS) (2010)
- Received an **AP grade(**awarded for **outstanding performance**) in 3 courses (**Digital Systems, Analog Circuits, Differential Equations**)
- All India Rank-129 in the Joint Entrance Examination(IIT-JEE) among 384,000 students
- All India Rank-33(State Rank-8) in AIEEE (All India Engineering Entrance Examination) from among 1,000,000 students (2009)
- **1st in Mumbai** at the **10th class ICSE** Board Examination (2007)
- Pursuing **Minor** in **Computer Science and Engineering**
- Among the top 1% students in the state at the National Standard Examination in Chemistry (NSEC) (2009)

AWARDS AND SCHOLARSHIPS

- Awarded **Honorarium for Academic Excellence** by IIT-Bombay (2010 & 2011)
- Recipient of the **Merit Scholarship for Professional Courses** (awarded by **CBSE**, Govt. of India) for outstanding performance in AIEEE 2009
- Recipient of **Boeing Scholarship** for outstanding academic record (2009-10)
- Was awarded **Gold Medal,** for being placed in the top 35 out of 34,000 students in Indian Physics Olympiad **(InPhO**) conducted by Homi Bhabha Centre for Science Education

RESEARCH INTERNSHIP

Long Term Wireless EEG Monitoring and Correlation with Behavior in Freely Moving Animals
Guide: Prof. Nitish Thakor, Neuroengineering and Biomedical Instrumentation Lab, Johns Hopkins University, USA (May `11-July `11)

- Designed and built a low power wireless EEG monitoring system using an existing custom VLSI chip and commercial Nordic Transreceivers
- Behavioural data was extracted from an accelerometer (ADXL 345) mounted along with the VLSI chip and simultaneously infrared video recordings
- All the data was processed using LABVIEW on a PC
- System verified by continuous data collection for 1 day (24 hrs)

KEY PROJECTS UNDERTAKEN

VLSI Telemetry Chip for Bio-medical Applications (Aug `11- ongoing)
Guides: Prof.Maryam Baghini, IIT Bombay

- Designing an ultra low-power chip for efficient power and data telemetry in the MICS Band
- This involves study of the most suitable modulation techniques, circuit design and layout in a 250nm CMOS process technology
- Currently studying the drifts in frequency due to process variations and design techniques to overcome them

Secure Wireless Communication with Jammer (Aug `11-Dec `11)
(Course Project, Communications Lab)
Guide: Prof Abhay Karandikar

- Designing Hardware to generate uniform white noise with dynamically hopping frequency "holes"
- Communication would be done using these "holes" by Frequency Hopping Technique
- It involves design and hardware verification of precise tuneable notch filters and microprocessor based implementation of FHSS.

Reed Solomon Encoder and Decoder (Feb `11-April `11)
(Course Project, Digital Systems Lab)
Guide: Prof Sachin Patkar

- Designed and implemented a Reed-Solomon based error correction system used for forward error-correction during digital data storage and transmission using Galois Fields
- Tested and verified the encoder hardware using commercial ICs on a breadboard implementation
- The decoder code was written in Verilog and synthesized using Altera Quartus II. It was emulated on a Xilinx Spartun-3E FPGA board

Digital Oscilloscope cum Signal Generator (DSO) (Aug `10-Dec '10)

- Part of a team of 4 students involved in building a low-cost wireless DSO which can generate signals upto 10MHz frequency.
- Was responsible for coding the microcontroller and generating desired signals from the signal generator IC AD9833

"Smart" Glove-Controlled Helicopter (Electronics Club Summer Project) (May `10-July `10)

- Designed a remote controller for a RC Helicopter using a 3-axis Accelerometer
- Interfaced the accelerometer to a microcontroller ATMega644

Mini UID (Unique Identification) for IIT-Bombay Campus
Guide: Prof. Deepak Phatak (Aug `09-Dec `09)

- The project involved building a biometric security system for the IIT- B campus using fingerprints
- Decided and successfully implemented an algorithm to extract specific minutiae from fingerprints and supply their Cartesian co-ordinates in different files for data matching
- Was the Team Leader for the project

SKILLS

- **Programming Languages**: C, C++ , Java, Verilog, VHDL
- **Packages**: MATLAB, SCILAB, LabVIEW, Eagle, WinAVR, NGSpice, MAGIC
- **Microcontrollers**: Atmel AVR, 8085,Microchip PIC, Arduino
- **Other Utilities**: LATEX, Apache, PHP, SQL, HTM

POSITIONS HELD

- On the **Editorial Team** of Electrical Engineering Department Magazine, Background Hum.
- **Department Academic Mentorship Program(DAMP) Mentor** :
  Mentoring second year academically weak students to realize and utilize their full potential

EXTRA-CURRICULAR ACTIVITIES

- **Best Design Award** in the F1 racing competition (design and built a remote controlled car)
- **1st prize** in **ROBOCON**(design and build a robot capable of building a pyramid by picking and placing blocks at the right position and height)
- **NSS Volunteer:** Visited small villages near Mumbai & interacted with the locals to understand their problems.

COURSES COVERED(BY MAY `12)

Digital Systems	VLSI Design	Operating Systems
Analog Circuits	Digital Communication	Data Structures and Algorithms
Microprocessors	Control Systems	Discrete Structures
Communications Systems	Digital Signal Processing	Linear Algebra & Differential Equations
Signals and Systems	Electronic Devices	Data Analysis and Interpretation
A First Course in Optimization	Network Theory	Complex Analysis
Electromagnetic Waves	Power Systems	Psychology
Probability & Random Processes	Power Electronics	Economics

DECLARATION

I hereby declare that all the above information is true to the best of my knowledge.