Ankit Shukla

Indian Institute of Technology Madras

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Education

Program	Institution	%/CGPA	Year of completion
Dual Degree (B.Tech & M.Tech), in Electrical Engineering	Indian Institute of Technology Madras, Chennai	**8.29/10**	2017
XII (CBSE)	Sir Padampat Singhania Education Centre, Kanpur	**92.4%**	2011
X (ICSE)	St. Basil's School, Basti	**95.57%**	2009

Research Experience

Rigorous modelling of scattering and self-heating in a Silicon Nanowire **July 2017 - Present**

Advisor: Dr. Anjan Chakravorty, IIT Madras

- Implemented electron-phonon interaction based scattering dominated transport in the NEGF framework.
- Involved in hydrodynamic transport model in mode-space to consider the effects of thermal diffusion and self-heating in the device
- Interested in incorporating the first principle based quantum mechanical model for electron and phonon transport to study the effects of self-heating

Development of a Silicon Nanowire simulator in mode-space with different transport models **June 2016 - May 2017**

Advisor: Dr. Anjan Chakravorty, IIT Madras

- Worked on modelling electron transport in a Silicon Nanowire from the first principle by solving Poisson's and Schrodinger's equation
- Electron transport subsequently modelled both semi-classically using BTE and quantum mechanically under the NEGF framework in the subbands
- The developed simulator can predict results in ballistic as well as diffusive transport limits
- Using Fourier's law estimated the rise in temperature due to heat generated by the current flow and the effect of this temperature rise on device characteristics

Course Projects

A method to improve PPV sensor developed by HTIC, IITM **March-May 2016**

Biomedical Electronic System

- Proposed methods to improve the quality of the PPV sensor built by HTIC, IIT Madras.
- Collected data from close to 40 subjects and made a detailed study of the observations to find out possible ways of improving the results
- Measured pulse width, peak to peak interval, crest time ratio on each of the collected sample and built a classifier to resolve the signal as good or bad quality

Standard Cell Design **Sept - Nov 2015**

Digital IC Design

- Designed layouts of sequential elements like D-type flip-flop, and combinational elements like NAND, NOR gates in Magic
- Used the extracted SPICE netlist to create a synopsis library file indicating timing and power characteristics

Industrial Experience

Virtualization of a simulator **May - July 2015**

General Electric, Bangalore

- Worked on the development of a simulator in a team of experienced professionals with an aim to optimize the company's resources
- Contributed towards establishing serial port communication between different modules of the software replica of the hardware simulator using C and C++

Skills and Tools

- Languages: Python, C, C++
- Softwares and Tools: MATLAB, Verilog, LaTeX
- Operating Systems: Window, Ubuntu

Relevant Coursework

- Solid State Devices
- Device Modelling
- VLSI Technology
- Advanced CMOS Devices and Technology
- MOS Device Modeling and Characterization
- Biomedical Electronic Systems
- Classical Physics
- Quantum Physics 1 & 2
- Analog Circuits
- Digital IC Design
- Power Electronics
- Analog Circuits Lab

Positions of Responsibility

Teaching Assistant **July - April 2017**

Electrical Department, IIT Madras

- Assisted in lab sessions, grading exams, and coordinated course related activities in an undergraduate course on Computer Organization
- Assisted in grading assignments, quizzes, and final exam, and ensuring a smooth functioning of the classroom activities in an undergraduate course on Communication Systems

Mentor Avanti Fellows **Aug 2014 - May 2016**

Pondicherry chapter, IIT Madras

- Member of a team of highly motivated students from IIT Madras with an aim to help underprivileged kids in their preparation for IIT-JEE
- Made frequent visits to JNV(school) in Pondicherry to teach some topics from high-school Physics and help the students in their studies

Project Representative **May 2013 - May 2014**

NSS, IIT Madras[1]

- Managed a team of about 12 first year students and organized monthly trips to a school in the city
- Our team helped a group of visually impaired undergraduate students in their studies by reading to them and helping them wherever possible

Miscellaneous

- Secured an **All India Rank 749** in IIT-JEE 2012 among half million applicants
- Successfully completed 14,000ft Sar-Pass Himalayan trek in June 2017
- Member of hospitality team for Saraang[2] 2014 responsible for the accommodation of the participants
- Active member of hostel hockey team for three years that won a silver medal in Schroeter.[3]

[1] NSS stands for National Service Scheme.
[2] Saarang is IIT Madras' annual cultural festival.
[3] Scroeter is IIT Madras' sports event.