

#### ACADEMIC DETAILS

Degree/ Board	Institute	Year	CPI/%
B.Tech	IIT Gandhinagar	2016-Present	9.08
Maharashtra Board(HSC)	Pace Junior Science College	2016	90.62
ICSE	Bombay Scottish School, Mahim	2014	93

#### FIELDS OF INTEREST

- Study of charge, spin, excitonic, photonic and thermal transport in nanoscale systems
- Theoretical study of mesoscopic systems
- Computational Nanoelectronic modeling
- Computational modeling of materials for applications in nanoscale devices

#### TECHNICAL SKILLS

- **Script:** Python, Embedded C, VerilogA
- **Tools:** MATLAB, SILVACO(TCAD), Sentaurus (TCAD), Cadence Virtuoso,  $\LaTeX$

#### MAJOR PROJECTS AND INTERNSHIPS

- **Electron Transport in Graphene Nanostructures** (Research Project)  
(Guide:Dr. Ravi Hegde, Assistant Professor, Indian Institute of Technology Gandhinagar, December'18 - present)
  - Understanding fundamentals of transport physics in nanoscale low dimensional systems
  - Calculating the Conductance of various Graphene dots of various geometries in Kwant(python library)
  - Calculated the I-V curve for these structures using Landauer Formalism
  - Calculating the conductance curves for Graphene-Hexagonal Boron Nitride Ring-Dot Heterostructures and observing the effect of changes in geometry of the structure on its transport
  - Attempting to gain a deep understanding of transport in these structures and to discover new physics which can be exploited in various novel devices
- **Modeling Thermal Capacitances in Hetero-junction Bipolar Transistors** (Summer Research Internship)  
(Guide:Dr.Anjan Chakravorthy, Professor, Indian Institute of Technology Madras, May'18 - present)
  - Conducted a numerical study of heat flow in various transistor geometries using TCAD and circuit modeling tools
  - Proposed a *compact model* for transient self-heating in *Si-Ge HBTs*
  - Implemented the compact model in *Verilog A*
  - Obtained an accurate model which matched with *TCAD* thermal simulations of the transistor
- **Cost-Effective Integration of Bipolar Transistors in 180nm CMOS Technology** (Research Project)  
(Guide:Dr.Nihar Mohapatra, Associate Professor, Indian Institute of Technology Gandhinagar, Jan'18 - Apr'18)
  - Studied the various aspects of the process which strongly affect the bipolar transistors performance
  - Optimized the doping concentration of the base region and the collector region of the BJT as well as the emitter and base thickness
  - Studied the effect of Shallow Trench Isolation edges on the breakdown voltage of the transistor
  - Experimented with various lateral device geometries and studied the variation in the device performance
  - Attained a gain  $\beta$  of 120 and an Early Voltage of 23 V for a bipolar NPN transistor
- **Materials Science of Quantum Computers** (Course Project)  
(April'18 - May'18)
  - Conducted a literature survey, studying the various methods of realizing qubits and the materials involved
  - Analyzed the properties of the materials which are required for this application
  - Identified the advantages and disadvantages for different methods of realizing quantum bits
  - Compiled the findings from the research and analysis into a comprehensive report

## ACADEMIC ACHIEVEMENTS

- Dean's List holder for the 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> semester. Dean's List is awarded to a student for excelling in academics by obtaining a CPI of 8.5 or higher in that particular semester

## RELEVANT COURSES

- *Undergraduate Level Courses:*
  - Electronic Devices
  - Physics 101(Introduction to Electromagnetism and Quantum Mechanics)
  - Introduction to Materials Science
- *Graduate Level Courses:*
  - Physics of Transistors
  - Nanoscale Device Engineering
  - Lasers
  - Physics of 2D materials

## EXTRA-CURRICULAR ACTIVITIES

- Represented IIT Gandhinagar in various sports tournaments as a member of the college basketball team
- Prepared Question Banks for Undergraduate Mathematics Courses, September 2017-March 2018 at IIT Gandhinagar
- Conducted a  $\text{\LaTeX}$ workshop for the IIT Gandhinagar community