



## ACADEMIC DETAILS

Year	Qualification	Institute, City	CPI/%
2018	M.Tech - Solid Mechanics and Design	Indian Institute of Technology Kanpur	7.8/10
2015	B.E. - Mechanical Engineering	Gujarat Technological University(LDRP-ITR)	9.02/10
2011	Intermediate/+2 (GSEB)	Amrut school, Ahmedabad	83.33%
2009	Matriculation (GSEB)	Amrut school, Ahmedabad	76.92%

## KEY SCHOLASTIC ACHIVEMENTS

- Ranked **1<sup>st</sup>** in **Bachelor of Engineering** in Department of Mechanical Engineering at LDRP-ITR and awarded with **Institute Gold Medal** by Prof. Arvind R. Patel on behalf of Kadva Patidal Kelavni Mandal for the same in 2015.
- Achieved **All India Rank 786** in **GATE, 2016** among 0.21 million mechanical engineering candidates.
- Ranked **27<sup>th</sup>** in Bachelor of Engineering in Mechanical engineering batch of 2015 at Gujarat Technological University.
- Conferred with **Maneklal M. Patel Memorial Scholarship** for academic year 2014-15 (*given to top 1% student from institute*) for their excellent performance at Kadi Sarva Vishwavidyalaya by President Vallabhbbhai M. Patel.

## THESIS AND PROJECTS

- Study of Dislocation and Disclination Motion of Graphene at zero kelvin** **M.Tech Thesis, IIT Kanpur**  
*MD Simulation, Thesis Supervisors Dr. Anurag Gupta and Dr. Shakti Singh Gupta* *Dec'16-present*
- Dislocations in Graphene, Carbon Nano Tubes (CNT) and Disclinations in Fullerene are modelled for sputtering of carbon atom and topological constraints and their input files are generated using **Python** programming language
- Defects are stable at central portion of structure** were concluded by analyzing behavior of Defects through the energy variation using **Molecular Simulations (Tinker)** and **Force Filed Explorer**, with **mm-3 (2000) potential**.
- Generated surface plots for variation in total potential energy using **MATLAB** to examine defect formation energy.
- Study of Diclocation and Disclination and their motion of **Fullerene, Torus, CNT, Graphene sheet (Plain and Hollow)**.
- Analysis of each object was done by **Molecular Simulation (Tinker)** and for that input files were generated using **Python**.
- Visualized defects and their energy variation was noted using **Force Field Explorer (FFE)** using **mm-3 (2000) potential**.
- Developed network model of optimization using continuum approach on **Python, MATLAB** and **JAVA** to match MD results.
- Concluded that **Defects are stable at central portion of structure** and they should match object's topology constraints.
- Design and Development of Centrifugal Type Positive Frictional Clutch** **B.E. Project, LDRP-ITR**  
*Automotive Engineering, Project Supervisor Prof. D. H. Pandya* *May'14-May'15*
- Avoided clutch slip phenomena by using the combination of centrifugal type, positive and frictional type disc clutch.
- Generated model of complete system using **Solidworks** in first phase and analysis of each component and Assembly as well as sub-Assembly was done in second phase **ANSYS Static Structure toolbar**.
- Patent has been filed and communication is going on with **Indian Patent Office** for design related issues.
- Analysis of Neo-Hookean material and Solid with Elasto-Plastic behaviour** **Course Project IIT Kanpur**  
*Non-Linear FEM, under guidance Prof. Sumit Basu* *Jan'17-April'17*
- Developed **UMAT** for **ABAQUS**; Tangent stiffness matrix for Neo-Hookean based on free energy function and for Elasto-Plastic material both Continuum and Consistent tangent stiffness were based on Von-Mises yield condition.
- Transverse Vibration of Beam** **Course Project IIT Kanpur**  
*FEM, under guidance Prof. P. M. Dixit* *Aug'16-Nov'16*
- FEM code is developed in **MATLAB** with two noded element of Hermitian  $C^2$  continuous shape function of 5 gauss points.
- Solved eigen value problem to find natural frequency of beam with quadratic variation in cross section area.
- Axisymmetric Steady State Heat Conduction** **Course Project IIT Kanpur**  
*FEM, under guidance Prof. P. M. Dixit* *Aug'16-Nov'16*
- Developed **MATLAB** code for 2D problem with Lagrangian  $C^0$  continuous three noded triangular element of total 3 DOF.
- Symbol identification** **Course Project, IIT Kanpur**  
*ML, under guidance Dr. Purushottam Kar* *Aug'17-Present*
- Given math/text symbols in handwritten form and that too as in combination, Machine gives LaTeX code for that symbol.
- Design of Scheme interpreter in CS61A** **Course Project, UC Berkeley(online)**
- Developed an interpreter for a subset of the **Scheme** language using **Python**. The project concludes with an graphics challenge to produce recursive images in only a few lines of code in Scheme language.

## TECHNICAL SKILLS

- Programming Language:** Python, C/C++, JAVA, HTML/CSS, Fortran-95, Scheme, Logic.
- Software:** Solidworks, ANSYS, ABAQUS, MATLAB, LaTeX, Tinker, AutoCAD, Creo-Parametric, Git.

## COURSES UNDERTAKEN

- Mechanical Engineering:** Strength of Material, Solid Mechanics, Molecular Dynamics Simulations, Finite Element Method (Linear, Non-linear), Vibration of Continuous Systems (1D,2D), Advance Dynamics.
- Computer Science and Engineering:** Machine Learning(CS771A, IITK(Audit)), Data Structure and Algorithm in JAVA(CS61B,UC Berkeley(online)), Structure and Interpretation of Computer Program(CS61B, UC Berkeley(online)), Introduction to Algorithms(6.006, MIT OCW), Computer system Engineering(6.033, MIT OCW), Operating System(CS140, Stanford(online)), Theory of Computation(6.045, MIT OCW).

## STUDENT GOVERNANCE

### Department Placement Moderator (ME)

Student Placement Office

IIT Kanpur

May'17-Present

- Integral member of **3-tier team** of **120 members** to facilitate placements of **1200+** graduating students.
- Developing and strengthening contact with **400+** core companies and inviting them for upcoming placement session.
- Responsible for guiding and helping the mechanical engineering students in their placement preparation.

### Web Administrator

Association of Mechanical Engineers

IIT Kanpur

July'17-Present

- Carried out maintenance, planning of content and improved the online presence of IIT Kanpur's AME website.
- Connected **500+** students of mechanical engineering and officials as well as Professors through an informal mean
- Started a web platform (**AME Digital Library**) to enable collaboration of academic literature among students.

## EXTRA-CURRICULAR ACTIVITIES

- Secured **3<sup>rd</sup>** position in **Technical Quiz** among **480+** students at Mad-Labs'12(annual departmental technical festival) at **LDRP-ITR** and awarded with **Bronze medal** by Prof. Kaushal Bhavsar for the same.
- Ranked **2591<sup>th</sup>** in **SNACK Down'17** a annual competitive programming challenge by **CodeChef** with **22000+** teams.
- Participated in X-Press and **Presented review paper** at **Xenesis'13(annual inter-collegiate technical festival)**.
- Participated in **Paper Presentation** and presented review paper on reciprocating and centrifugal pumps at Mad-Labs'12
- Attended two day automobile workshop on transmission, braking and engine emission at Xenesis'13.
- Attended **Klockner-Desma** and **IGTR(Indo-German Tool Room)** as part of industrial visit from LDRP-ITR