

# ELANKOVAN M G

ME17S300 | [scholars.iitm.ac.in/profile/ME17S300](https://scholars.iitm.ac.in/profile/ME17S300)  
[ilailabs.github.io/profile-elankovanmg](https://ilailabs.github.io/profile-elankovanmg)

## SUMMARY

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I believe conscientiousness and patience to be my key personality traits. My exposure to research and proficiency in computers helped hone my skills further. I look forward for an opportunity to work in a highly-industry-driven research environment that is both challenging and provides me ample scope to build my career.

## EXPERIENCE

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**Project Lead**, (PrepLeaf Preparations Pvt. Ltd) *Jun 2020 - Oct 2020*

- Project OnlineTangedco: Conceived a project idea and collaborated with PrepLeaf Preparations Pvt. Ltd as our technology partner
- Roles Responsibilities: Planning the project; Assigning the tasks to teammates; Monitoring the progress. Also responsible for strategic marketing and sales of the product
- Scheduling of online mock exams, organizing and assigning the works to faculties to prepare study materials

**Project Associate**, (Chennai Urban Resilience Program) *May 2019 - Jul 2019*

- Social Project: Closely collaborated with an international student team to address solutions related to Chennais solid waste management.
- This project was organized and sponsored by the University of Cambridge, IIT Madras, Yale NUS College, University of British Columbia

**Teaching Assistant**, (IITM) *Jan 2019 - Nov 2019*

- Tutorial classes on Introduction to python
- Tutorial classes on CAD drawing

**Freelance Educator**, (Engineering Mathematics) *Mar 2018 - Oct 2020*

- 300+ Hours of classroom teaching experience in the following topics: Determinants & Matrices; Calculus & Differential Equations; Vector Calculus; Functions of Complex Variables; Transforms; Numerical Methods; Applied Probability; Material Science

## PROJECTS

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**MS Research Project: Kapitza Resistance And Elastic Phonon Scattering Properties of Grain Boundaries in Diamond-Silicon**

- Atomistic Modelling of Grain Boundary Interfaces using Bicrystal Geometry: We computed the grain boundary energy curve of Si GBs with  $\langle 100 \rangle$  and  $\langle 110 \rangle$  misorientation axis. Further, these models can be used to study the thermal heat transport properties.
- Thermal Conductivity Calculation using Non-equilibrium Molecular Dynamics Simulation: Thermal heat flux is induced in the bicrystal system using non-equilibrium molecular dynamics simulations to compute the thermal resistance of the grain boundary interface.
- Elastic Phonon wave-packet scattering at 2D Grain Boundaries using Molecular Dynamics: To get deeper insights into the mechanism of heat transport at the interfaces, the role of phonon wave-packet scattering is also studied in 2D grain boundaries modelled using LJ potential.

**UG Project: Investigation and Design of customized Airfoil for Low-Speed Vertical Axis Wind Turbine**

- We explored the possibility of a new design in the airfoil cross-section of VAWT. The new design is proposed based on the lift to drag coefficient and the model is designed in CATIA V5 Sketcher

**UG Mini Project: Kinetic Energy Recovery System Adopted Bicycles**

- A new brake mechanism that can store the kinetic energy of bicycles during the application of sudden breaks and a recovery system to release the stored energy is designed using open coil spring and actuator. We tried to fabricate the working prototype of this model.

**Conceptual Design of Electromagnetic Damper for Motorcycle Suspension [Published]**

- The new idea of using the multiple solenoidal-magnetic coils for the rear suspension of motorcycles is proposed. This model uses an active feedback loop to control the damping forces through Electronic Control Unit making the suspension active.

**Flutter Application: Android and iOS Mobile Application**

- My Quiz application helps the aspirants preparing for competitive exam by attempting quizzes
- Functionalities Implemented: (1) User Login & New user registration; (2) Display the contents of Notes & Quizzes from google firestore; (3) Evaluates the quiz score with the marking schemes; (4) Makes the solution available for user attempted the test; (5) User profile details
- Type: Hobby Project; Duration: 3 Weeks; Built Using: Android Studio with Dart Programming language;

**Numerical solution for plane problems using Finite Element approach [ME6800]**

- Simple truss and beam problems have been solved using Matlab;

**Uniaxial Tensile Test of Single Walled Carbon Nanotube: A MD approach[AM6512]**

- Single walled carbon nanotube structure has been generated and uniaxial tensile testing has been performed using LAMMPS

## MD Simulation of Dislocation Dipole[ME7244]

- The dislocation dipole structure has been modeled using Matlab and the stable dislocation dipole structure and energy has been calculated using LAMMPS

## Urban Horticulture Project [ID5120]

- Household vegetable gardening is proposed to be the best solution to deal with degradable solid waste management

## EDUCATION

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**Master of Science(Interdisciplinary)**, Mechanical & Physics

*Jun 2017 - Dec 2020*

IIT Madras, Chennai

**GPA: 7.8**

**Bachelors of Engineering**, Mechanical Engineering

*Jul 2012 - Jun 2016*

Thanthai Periyar Government Institute of Technology, Vellore

**GPA: 7.32**

**Secondary Education**, Computer Science

*Jul 2010 - Jun 2012*

Velammal Mat. Hr. Secondary School, Chennai

**Percentage: 92.9**

**High School**, Matriculation

*Jul 2009 - Jun 2010*

Velammal Mat. Hr. Secondary School, Chennai

**Percentage: 91.8**

## SKILLS

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**Programming Languages:** Python(intermediate), Dart

**Scientific Computing:** MATLAB(proficient), SageMath, Mathematica

**CAD Modelling:** CATIA V5(proficient), SolidWorks, NX-CAD

**Simulation Tools:** LAMMPS, NX-Nastran, Ansys

**Documentation::** Markdown(proficient), LaTeX(intermediate)

**Linux OS:** Shell scripting in linux

## ACADEMIC COURSES

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- Application of Molecular Dynamics (9/10)
- Finite Element Analysis (8/10)
- Foundations of Computational Materials Modelling (8/10)
- Structure & Properties of Grain Boundaries and Interfaces (7/10)
- Advanced Mechanics of Solids (7/10)
- Innovative Entrepreneur-I (9/10)
- Urban Resilience (9/10)
- Winter School on Social Entrepreneurship (8/10)

## ONLINE COURSES

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- Apr 2020 - Introduction to Flutter Development using Dart | AppBrewery
- Apr 2020 - AWS Cloud Practitioner Essentials | AWS training
- Dec 2019 - Introduction to Statistics With Matlab | Matlab Academy
- Nov 2019 - Introduction to Linear Algebra With Matlab | Matlab Academy
- Sep 2019 - Machine Learning With Matlab | Matlab Academy
- Jun 2019 - Deep Learning With Matlab | Matlab Academy
- Apr 2019 - Joy of Computing Using Python | NPTEL-IIT Ropar

## TRAINING & CERTIFICATION

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- Master diploma in automotive design

## ACCOMPLISHMENTS

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- Selected in International Winter School on Social Entrepreneurship organized by the Center for Social Innovation & Entrepreneurship at IIT Madras
- Published a paper titled "Conceptual design of Electromagnetic Damper for motorcycle suspension" IJERT, Vol.4, Issue 08
- Winner: Paper presentation in National Technical Symposium-2014, CIPET, Chennai
- Best Paper presentation award CRANIKZ Symposium 2015, TPGIT, Vellore
- Winner: CAD Modelling in National Technical Symposium-2014, CIPET, Chennai
- Winner: CAD Modelling in National Technical Symposium-2015, Velammal Engg. College
- Winner: CAD Modelling in National Technical Symposium-2015, Adhiparasakthi College of Engg.