Anshuman

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Education

Indian Institute of Science, Bangalore **CGPA: 9.10/10**
M.Tech. in Aerospace Engineering *Aug. 2023 – present*

University Institute of Engineering and Technology, Panjab University, Chandigarh **CGPA: 8.84/10**
B.E. in Mechanical Engineering *Aug. 2019 – May 2023*

Academic Accomplishments

AIR - 01, GATE Engineering Sciences (XE) out of 11000, (100 Percentile) ***2023***
Obtained an All India Rank of 1^{st} *in GATE – XE in* 4^{th} *year of undergrad.*

AIR - 56, GATE Mechanical Engineering (ME) out of 63000, (99.9 Percentile) ***2023***
Obtained an All India Rank of 56^{th} *in GATE – ME in* 4^{th} *year of undergrad.*

Relevant Coursework

Mechanics of Materials, Design of Machine Elements, Flight Vehicle Structures, Mechanical Vibrations, Modal Analysis (Theory and Applications), Wave Propagation in Solids, Structural Vibration control, Finite Element Methods, Structural Optimization (Topology, Shape and Size), Fracture Mechanics, Mechanical Behaviour of Materials, Mathematical Methods for Aerospace Engineers, Control Theory, Mechanics and Thermodynamics of Propulsion, Fluid Mechanics, Applied Thermodynamics, Heat Transfer, Flight and Space Mechanics, Computational Fluid Dynamics.

Technical Skills

Languages | **Softwares** – ANSYS, ABAQUS, SolidWorks, FUSION – 360, AUTOCAD, Python *(intermediate)*, MATLAB *(intermediate)*, SIMULINK

Projects

Space Deploy-able Structures | *M.Tech. Dissertation* ***August 2024 – Present***

- Origami Inspired Deploy-able structures.
- Transition Waves for Deployment.

2D* FEM Modeling, for a *Plate with Centre Hole | *gmsh, MATLAB* ***March 2024 – April 2024***

- Geometry and Meshing created using *'gmsh'*, Solver and Post Processors were scripted using *MATLAB* from scratch.
- Flat plate with width hole diameter ratio *10* under axial pull modeled using Finite Element Methods.
- Element type used *Q4* and *T6* with *Iso-Parametric* transformations, convergence comparisons made amongst two.
- *MESH* generated in *'gmsh'* was unstructured *MESH*.
- Stress concentration factor used as a parameter of convergence.
- Stress concentration factor used as a parameter of convergence, Achieved Stress concentration factor as 2.74 from algorithm i.e. $\sigma_{max}/\sigma_{nominal} = 3.04$.

2D* FEM Modeling, for a *Cantilever Beam | *MATLAB* ***Feb 2024***

- Cantilever Beam subjected to point load at tip modeled using Finite Element Methods.
- Geometry, Meshing, Solver, Post-Processor scripting done from scratch using *MATLAB*.
- *2D* FEM modeling done using *Q4* elements.
- *MESH* generated by scripting in *MATLAB* was structured *MESH*.
- Tip Deflection used as parameter for convergence
- Achieved error under 0.05% *(when compared to analytic elasticity solution)*.

3 – Axis Polar CNC | *ANSYS, FUSION-360* | *B.E. Major Project* ***Jan. 2023 – May 2023***

- Demonstrated the automation of the process of cutting on curved cylindrical surface.
- Achieved by using a cylindrical surface and 2 stepper motors, 1 servo motor for 3 axis motion.
- Cutter was simulated using a pen.
- For *CAD Modeling* and *FEM* Simulations, *FUSION–360* and *ANSYS* were used respectively.

Nut Sorting Machine | *ANSYS, FUSION-360* | *B.E. Minor Project* ***Aug. 2022 – Dec. 2022***

- Developed a prototype for Automating the process of Crack detection on nut for imaging and further image processing.
- By virtue of it camera can take picture of all 6 faces of hex-nut in a single click.
- Goal was achieved by clever use of *FUSION–360*, and *FEM* structural simulations were carried out in *ANSYS*.

Social Distancing Device | *AUTOCAD*, *ARDUINO UNO* | *Summer Project* ***July 2020***

- Project was done by keeping *COVID–19* in consideration.
- Developed a prototype which Alerts people if 1 meter distance is breached.
- Ultrasonic Sensor and Buzzer integrated with Arduino Uno, assembled to be a compact device powered by 9V battery.
- *CAD* modelling done in *AUTOCAD*.

Interests

INTERESTS – Finite Element Methods, Stress Engineering, Space Deploy-able Structures, Structural Health Monitoring(SHM) [Digital twins for SHM], Applications of Deep Learning in Structural Engineering Problems, Fatigue Life Analysis, Vibration Control, Product Design.

Soft Skills

Good Communication skills, Collaborative, Leadership, Problem Solving

Experience

Guru Gobind Singh Super Thermal Power Plant ***July – 2022***

4-weeks Training at Thermal Power Plant in Mechanical Maintenance