Jainam Mehta

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Education

University of Washington, Seattle *Sept 2023 – Aug 2025*

Master of Science in Aeronautics & Astronautics | Specialization: Structures

- Fracture Mechanics, Finite Element Analysis, Solid Mechanics, Compressible Fluid Dynamics, Dynamical Systems & Chaos.

Manipal University, Dubai *Sept 2019 – June 2023*

Bachelor of Science in Mechanical Engineering | Specialization: Machine Design

- CAD/CAM, Mechanical Design, Python Programming, Heat Transfer, DFMEA, Turbo Machines.

Technical Skills

Simulation & Modeling: Abaqus, Ansys (ACP, Workbench, Fluent), Altair HyperWorks (OptiStruct, HyperMesh, HyperStudy), LS-Dyna, NX Nastran, Radioss, COMSOL.

Programming & Computational Tools: Python, MATLAB, C++, Shell scripting, SQL, ML-based modeling.

CAD & Design: SolidWorks, CATIA, Creo Parametric, AutoCAD, Additive Manufacturing (FDM, Composite AM).

Documentation: LaTeX, MS Office Suite.

Professional Experience

University of Washington, Seattle

Teaching Assistant – Advanced Composite Structural Analysis (AE 553) *Mar 2025 – June 2025*

- Guided a class of 40+ students in building layered shell and cohesive-zone FEA models in OptiStruct.
- Taught simulation-to-failure workflows and post-processing, improving model setup quality and convergence.
- Hands on mentorship of 20 term projects with technical feedback, increasing performance of the class by 15%.

Teaching Assistant – Mechanics of Composite Materials (AE 550) *Sept 2024 – Mar 2025*

- Delivered weekly review sessions on micromechanics, anisotropic elasticity, and composite failure theories for 60+ students.
- Provided support for simulation-based and created coding tutorials for students.
- Collaborated with faculty and led personal office hours to reinforce basic understanding of composite mechanics.

Grader – Aerospace Structures 2 (AA 332) *Mar 2024 – June 2024*

- Evaluated problem sets and exams for 90+ students across topics like beam theory, stress analysis.
- Provided detailed annotations and review suggestions that helped students correct conceptual errors.
- Collaborated with the instructor to standardize grading rubrics and improve turnaround time.

Teaching Assistant – Additive Manufacturing (AE 544) *Dec 2023 – Mar 2024*

- Trained students on end-to-end FDM and resin printing workflows, enabling prototyping across 20+ projects.
- Reviewed designs for printability and manufacturability, reducing print failures by 30%.
- Managed lab operations and printer scheduling to maintain high throughput.

European Perfume Works, U.A.E.

Research & Development Intern *May 2022 – Aug 2022*

- Created engineering drawings and inspection documentation for high-volume components using AutoCAD.
- Redesigned jig components with improved material selection, increasing durability and reducing wear by 21%.
- Investigated failure trends in bottle capping systems and proposed fixture modifications, reducing production waste by 9%.

Projects

Master's Thesis *– Multiscale Optimization of Weav3D Lattice-Reinforced Composites* *May 2024 – Aug 2025*

- Developed automated multiscale optimization workflow integrating homogenization to evaluate 100+ designs.
- Applied surrogate modeling techniques to enable efficient design optimization across large parameter spaces.
- Developed Python scripts to parameterize geometry and post process results, reducing analysis time by 60%
- Reduced baseline composite panel mass by 20% through optimization while meeting strain constraints

Senior Design Project *– Comparative Study of Different Drone Structures* *Jan 2023 – June 2023*

- Designed and simulated multirotor UAV drone frames using ANSYS and Fluent to compare performance and mass.
- Assembled and tested prototypes using 3D printing and integrated microcontrollers with sensors for real-time data acquisition.
- Conducted 20+ iterative flight tests and structural tweaks, achieving an 18% gain in endurance and efficiency.

Publication

Mehta, J.C. ***Multiscale Optimization of Weav3D Lattice-Reinforced Composites for Lightweight Structural Design***. Master's Thesis, University of Washington, 2025. Available on ProQuest.