

Raghav Sharma

(480)-278-0516 | ras325@pitt.edu | [linkedin](#) | [github](#) | [Google Scholar](#)

EDUCATION

- University of Pittsburgh, PA | **Ph.D.** (Mechanical Engineering) | **GPA=3.75** | Expected Graduation **Fall 2024**
- Arizona State University, AZ | **M.S.** (Mechanical Engineering) | **GPA=3.88** | **2019**
 - Masters Thesis: Unit cell selection for Lattice Design for various structural loading cases
- Punjab Technical University, INDIA | B.Tech. (Honors) (Mechanical Engineering) | **GPA=78/100** **2016**

RESEARCH EXPERIENCE

Graduate Student Researcher | University of Pittsburgh

- Implementation of algorithm to capture the effect of layer deposition in SLM process in FEA model **July 2020**
- Implementation of isotropic hardening model for Additive Manufacturing **March 2020**
- Stress Based Topology Optimization of 2D structure **November 2019**

Graduate Services Assistant | Arizona State University

- Compression testing of various lattices to analyze stiffness as a function of unit cell shape **August 2019**
- Simulation of various lattices to compare stiffnesses under compression, shear and torsion loading as a function of unit cell shape **July 2019**
- FEA simulation of carbon-fiber and Onyx honeycomb compression in ANSYS **June 2019**
- Analytical analysis & FEA simulation to compare homogenization and proposed member characterization for honeycomb behavior under compression **July 2018**

Research Assistant | IIT-Ropar, Rupnagar, Punjab, India

January 2017

- 3D FEA simulation of a custom VMC cutter using ABAQUS as a part of the experimental investigation on 'Elastic spring back in deformation machine bending mode'

TECHNICAL SKILLS

CAE

- Linear and Non-Linear Finite Element programming for static and dynamic cases in structural and thermal domain
- Topology Optimization (Programming in MATLAB, ANSYS GUI, Altair Inspire GUI)
- ANSYS MAPDL & ABAQUS GUI (Static Structural, Explicit Dynamics, Steady-State thermal, Transient Thermal)
- Reacting flow simulations (Cantera)

Computer Technologies

- MATLAB, Python, C++, R
- Microsoft Office: Excel, PowerPoint, Word
- CAD: SolidWorks, CATIA V5, UG/NX

PUBLIC SERVICES & AWARDS

Publications

- R. Sharma, T. Le, J. Song, E. Harms, D. Sowa, A. Grishin, D. Bhate, "A Comparison of Modeling Methods for Predicting the Elastic-Plastic Response of Additively Manufactured Honeycomb Structures," peer-reviewed proceedings, Solid Freeform Fabrication Symposium 2018
- A. Abdullahi, I. Kankam, A. S. Gahloth, B. Arora, A. Agrawal, T. Eppley, Z. Salti, D. Goss, R. Sharma, D. Bhate, "Towards a Micromechanics Model for Continuous Carbon Fiber Composite 3D Printed Parts", peer-reviewed proceedings, Solid Freeform Fabrication Symposium 2019

Academic Service

- Peer reviewed papers for the SFF Symposium 2018 held at Austin, Texas

Awards

- Winner of **National Science Foundation (NSF)** student support award for SFF Symposium **2018 & 2019**

OTHER NOTABLE PROJECTS

Real Time Learning of Material Constitutive Model using Convolutional Neural Networks

November 2018

- Solution of classical 2D heat flow problem using GPU in Python
- Generation of thermal gradient data in Python and MATLAB for computation comparison
- Used data generated to develop a predictive model using CNN implemented via TensorFlow in Python

Finite Element Coding for 'Direct Visualization of Laser-Driven Focusing Shockwaves**September 2018**

- Simulation of Gaussian wave propagation of shockwaves generated by a laser-source in a polymer medium
- Use of Explicit Time integration for simulation in MATLAB
- Model validation using the concept of total energy conservation

Finite Element Coding for a circular rubber plate subjected to blast loading**August 2018**

- Simulation of blast loading on rubber plate dictated by Friedlander's equation of pressure
 - Use of Explicit Time integration for simulation in MATLAB
 - Model validation using the concept of total energy conservation
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RELEVANT COURSES (GRADUATE LEVEL)

- Design Optimization
 - Finite Elements for Engineers
 - Stress Analysis
 - Advanced Computational Mechanics
 - Structural Topology Optimization for Additive Manufacturing
 - Advanced Continuum Mechanics
 - Machine Learning (Pursuing)
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PRESENTATIONS

- R. Sharma, D. Bhate, "An Investigation into the Stiffness Response of Lattice Shapes under Various Loading Conditions", Solid Freeform Fabrication Symposium 2019, Austin, Texas
 - R. Sharma, D. Bhate, "An Investigation into the Stiffness Response of Lattice Shapes under Various Loading Conditions", Materials Research Society (MRS) conference 2019 (Spring Session), Phoenix, Arizona
 - R. Sharma, T. Le, J. Song, E. Harms, D. Sowa, A. Grishin, D. Bhate, "A Comparison of Modeling Methods for Predicting the Elastic-Plastic Response of Additively Manufactured Honeycomb Structures," , Solid Freeform Fabrication Symposium 2019,Austin,Texas
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REFERENCES

1. Dr. Dhruv Bhate
Associate Professor
Arizona State University
dpbhate@asu.edu
2. Dr. Beomjin Kwon
Assistant Professor
Arizona State University
kwon@asu.edu
3. Dr. Anupam Agrawal
Associate Professor
Indian Institute of Technology- Ropar, Punjab, India
anupam@iitrpr.ac.in