SUBODH CHANDRA SUBEDI

Madison, WI-53705 scsubedi@wisc.edu **https://subodhscs.github.io**

PhD Candidate in Mechanical Engineering with a strong background in Additive Manufacturing, CAD, FEA, and Topology Optimization. Experienced in DFM, failure analysis, design optimization, GD&T, and Solid modeling. Worked in design, manufacturing, installation and testing of heavy equipment in the energy industry. Fast learner, strong communicator, collaborator, and an organized, analytical, and reliable mechanical engineer

EDUCATION

PhD in Mechanical Engineering, August 2024
University of Wisconsin-Madison, USA GPA: 3.71
Thesis: Support Structure Optimization for LPBF-based Metal AM

Master of Science in Mechanical Engineering, August 2020
University of Wisconsin-Madison, USA GPA: 3.71

Master of Science in Mechanical Engineering, December 2017
University of North Dakota, USA GPA: 4.0
Thesis: Rolling Contact Fatigue of Solid and Hollow Disks

Bachelor of Technology in Mechanical Engineering, December 2012
MNNIT, Allahabad, India GPA: 7.35/10

ENGINEERING EXPERIENCE

Research Assistant, Jan 2019 - Present
Engineering Representation and Simulation Lab, UW-Madison
Alloy Design and Development Lab, UW-Madison

Support Structure Optimization for Metal Additive Manufacturing
- Designed novel truss-type support structure for metal additive manufacturing.
- Validated the optimized truss-type supports through printing on a LPBF machine.
- Computational tools for support optimization delivered to US NAVY and US ARMY

Geometric Postprocessing of Topology Optimized Designs
- Reviewed existing commercial solutions for geometric post-processing of TO designs.
- Proposed new methods for geometric post-processing of complex topology optimized designs.

Formula 1 Upright Design Challenge, Topology Optimization Roundtable 2019, NM, USA
- Designed and manufactured car upright with 90% less weight for a given multi-load problem using topology optimization and additive manufacturing

3D printed Tactile Maps for Visually Impaired
- Created tactile maps of campus for easy navigation, orientation, and mobility for visually impaired individuals
- Printed maps using polymer 3D printers to usable form factor.

In-process Failure Investigation in Ceramic 3D Printing
- Defined failures in ceramic 3D printing
- Modelled the build process to predict part build failures using computational and experimental tools.

Teaching Assistant, Jan 2018- Dec 2019
UW-Madison

ME 331 (Computer-Aided Engineering)

- Restructured the course to include FEA, size and topology optimization
- Teach GD&T, advanced modeling, analysis, and optimization using SolidWorks, MATLAB

ME 548 (Intro to Design Optimization)

- Assist course instructor in design optimization course using MATLAB, SolidLab

Teaching Assistant, Aug 2015 – Nov 2017
UND

FSAE Car Suspension Design

- Designed FSAE cars suspension with optimized anti-sway bars using ANSYS

Assistive Pedestrian Audio Loop for Visually Impaired

- Design a notification system for easy navigation and mobility for visually impaired individuals using personalized audio signals

Mechanical Engineer, Dec 2012 – Aug 2015
Nepal Hydro & Electric Limited, Nepal

- Designed, manufactured, and tested hydro-mechanical steel structures
- Performed Project and Contract management.
- Carried out Engineering Feasibility Studies
- Trained engineering staffs on using AutoCAD, CNC Plasma Cutter

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LEADERSHIP/VOLUNTEERING EXPERIENCE

- Designed and led 10-day workshop titled 'Introduction to Computer-Aided Engineering' for middle and high school students, August 2018, UW-Madison
- Led a 1-day workshop titled 'Learning Topology Optimization through Examples and Case Studies' at ASME IDETC-CIE Conference, August 2019, Anaheim, CA
- Judge – Capital Science and Engineering Fair, Madison, WI, 2019, 2022, 2023, 2024
- Judge – North Dakota First Lego League State Championships, 2016 and 2017
- Panelist and Moderator- Diversity Forum, UW-Madison 2024
- Wisconsin Experience Bus Trip, 2023
- Jagriti Yatra 2011, an international initiative on Innovation and Enterprise Led Development

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SKILLS

- Programming and Simulation Languages: MATLAB, Python
- Design, Modeling and Optimization: SolidWorks, ANSYS, CREO, Rhino, nTopology, Abaqus
- Additive Manufacturing Preprocessing Tools: Cura, Materialize Magics
- Additive Manufacturing Machines: EOS M-290, Ultimaker

AWARDS

- NSF-funded Student Registration Fee Waiver Award for Solid Freeform Fabrication (SFF) Conference 2021, 2022, & 2023, Austin, TX
- Student Grand Research Competition (SRGC) Conference Presentation Award 2019 and 2022, Graduate School, UW-Madison
- First Prize, Big Idea Challenge, UND College of Engineering & Mines, ND, Oct 2017

- Second prize in Startup Weekend, Grand Forks, ND (16-18 October 2015)
- Jagriti Yatra 2011, an international initiative on Innovation and Enterprise Led Development
- COMPEX Scholarship by Government of India for B. Tech in Mechanical Engineering, 2008

CERTIFICATIONS/TRAININGS

- Morgridge Entrepreneurial Bootcamp, UW-Madison 2023
- Research Mentor Training -2023, Center for Integration of Research, Teaching and Learning
- Research Mentor Training -2023, Delta Program, UW-Madison

AFFILIATIONS/MEMBERSHIP

- International Student Advisory Board 2022-23, Intl Student Services, UW-Madison
- International Peer Mentor 2016-17, Office of International Programs, UND
- Member - Student Advisory Board, Office of Dean, College of Engineering and Mines, UND
- American Society of Mechanical Engineers (ASME)
- American Society of Engineering Educators (ASEE)

SELECT PUBLICATIONS

- Subedi, S., Thoma, D.J. and Suresh, K., 2023. Multi-load Optimization of Support Structures for Minimizing Part Deformation in Laser Powder Bed Fusion, (*under review*)
- Subedi et.al, Towards the Optimal Design of Support Structures for Laser Powder Bed Fusion-Based Metal Additive Manufacturing via Thermal Equivalent Static Loads, *Additive Manufacturing Journal,* Volume *57, September 2022, 102956*
- Subedi, S.C., Thoma, D.J. and Suresh, K., 2022. Optimal Truss-type Supports for Minimal Part Deformation in LPBF. *International Solid Freeform Fabrication Symposium. University of Texas at Austin, 2022*
- Subedi, S.C., Verma, C.S. and Suresh, K., 2020. A review of methods for the geometric post-processing of topology optimized models. *Journal of Computing and Information Science in Engineering, 20(6), p.060801.*
- Subedi, S.C., and Suresh, K., Using Topology Optimization in an Undergraduate Classroom Setting, *ASEE Annual Conference 2022*, Minneapolis, USA
- Subedi, S.C., Thoma, D.J. and Suresh, K., 2021. Truss-Type Support Structures for SLM. *International Solid Freeform Fabrication Symposium. University of Texas at Austin, 2021*
- Kumar T, Subedi, S.C., Suresh K. Modern Design for Manufacturing. *Encyclopedia of Materials: Metals and Alloys, Elsevier, p162- 167, 2022*

POSTERS/PRESENTATIONS

- Multi-load Support Optimization for Minimizing Part Deformation in LPBF, SFF Symposium, Austin, Texas, Aug 2023
- Optimal Truss-type supports for minimal part deformation in LPBF, *SFF Symposium, Austin, Texas, July 2022*
- Using Topology Optimization in an Undergraduate Classroom Setting, *ASEE Annual Conference, Minneapolis, June 2022*
- Truss-type Support Structures for SLM, *SFF Symposium, Austin, Texas, August 2021*
- Rethinking Design in Mechanical Engineering – Research Meets Undergraduate and K-12 Education*, UW-Madison Education Research Fair, Feb-2019*
- Towards Parametric CAD Model Recovery from Topology Optimized Models, *TopOpt Roundtable, Albuquerque, NM, Mar – 2019*