

Sumedh Joshi, PMP®

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EDUCATION

Columbia University

New York, NY

MS in Mechanical Engineering (GPA - 3.51/4)

Sept 2022 – Dec 2023

Coursework: Sustainable Manufacturing, Carbon Sequestration, Advanced Heat Transfer, Energy Sources and Conversion, Mechanical Behavior of Materials, Space Vehicle Dynamics, Nanotechnology, Data Science for Mechanical Systems.

Key Achievement: Nucleate NY Activator 2024 Finalist Cohort

Dr. Vishwanath Karad MIT World Peace University

Pune, India

B. Tech, Mechanical Engineering (GPA – 8.9/10)

July 2017 – July 2021

Coursework: FEM, Mechanical System Design, Computational Fluid Dynamics, Product Lifecycle Management.

Key Achievements: Published 7 research articles in Scopus and SCI-Indexed Journals from 2020-2024 in Machine Design, CFD, and IoT domains with over 42 citations. Won 2 Best Presentation Awards at reputed Research Conferences.

EXPERIENCE

KBR, Inc.

Houston, TX

Associate Technical Professional

Jan 2024 - Current

- Supporting project managers with tracking, analyzing, and executing key project management activities for 4 critical and proprietary technology projects in Oil & Gas Refining and Plastic Recycling, with a combined value of \$25M.
- Conducted intensive market research and analysis in the proprietary equipment domain concerning KBR's key technology portfolio (Oil & Gas Refining, Ammonia Converters, Plastic Recycling, and Industrial Catalysts) to help position offerings and entry into new markets, resulting in contract renewals and new licensing deals worth \$20M.

Altair Engineering Inc.

Troy, MI (Hybrid)

CAE Validation Intern

May 2023 - Sept 2023

- Developed software quality assurance automation tests for Altair HyperWorks and HyperMesh functionalities, such as CAD Model Analysis and HyperMesh Postprocessing FE Results using Tool Command Language (TCL) and Python.
- Identified important manual testing instances and deployed TCL automation scripts for Optistruct and Nastran solvers in the latest production build, saving 200+ hours of engineering time and resources.

Schuck Lab, Columbia University

New York, NY

Graduate Research Assistant

Sept 2022 - Jan 2023

- Devised a Finite Element Analysis-based algorithm in the SfePy module using Python for strain estimation in 2D materials. Wrote a code to determine the AFM strain data of nanobubbles with arbitrary symmetry in 2D crystals.

RESEARCH AND ACADEMIC PROJECTS

Development and Analysis of a CCUS Facility for the Heidelberg Cement Plant

Columbia University, NY

Tools: Microsoft Excel, Python, MATLAB

Sept 2023 - Dec 2023

- Analyzed the impacts of retrofitting a hypothetical Post Combustion Point Source Carbon Capture Technology at the Heidelberg Cement Plant at Mitchell, IN, using the MEA (Monoethanolamine) solvent for carbon capture with 90% efficiency and Geological Saline Aquifer Storage to reduce Carbon Emissions and Ecological Impact.
- Conducted a thorough techno-economic review with indicator assessment and sensitivity analysis to quantify the economics of retrofitting the CCUS facility, as well as an environmental impact study and life-cycle analysis to justify the ecological benefits. Achieved a massive Carbon Emission reduction of 2.2 Mt CO₂/year and a feasible economic plan.

Study of Urban Heat Island Effect over New Delhi and Surrounding Area

Columbia University, NY

Tools: Python, MATLAB, WunderGround Weather Station Records

Feb 2023 – May 2023

- Studied the relationship between LST (Land Surface Temperature), vegetation, and precipitation over New Delhi and the surrounding area. Performed a regression analysis to quantify this relationship using LST data and satellite-derived Normalized Difference Vegetation Index data from 7 Wunderground Weather Stations.
- Devised a heat transfer model based on humidity, hourly precipitation, vapor pressure, and sensible heat to find the dependence of LST on precipitation for the monsoon season.

Sustainable Design Concepts of a Table Lamp to Minimize the Carbon Footprint

Columbia University, NY

Tools: Sustainable Minds LCA tool, MATLAB, Python, SolidWorks

Jan 2023 - May 2023

- Selected a commercial table lamp and conducted Non-Destructive Testing (NDT) to record important physical and material properties. Designed three alternate versions with design and material modifications leveraging SolidWorks.
- Conducted an extensive study to estimate the ecological impact and cost of material procurement and manufacturing, transportation, use, and disposal activities using the Sustainable Minds LCA tool.
- Achieved 71% improvement in mPt ratings, 20% positive ecological impact, 50% carbon footprint improvement, and 25% cost reduction for the best alternative table lamp model.

TECHNICAL SKILLS

- Software and Tools: SolidWorks, Siemens NX, Altair HyperWorks, ANSYS (APDL, ACP, Fluent and CFX), PROTEUS, AutoCAD, Siemens FEMAP, MATLAB Simulink, FemFat, Altair Hypermesh, ARAMIS Pro, MasterCAM, Microsoft Excel, Microsoft Project, ImageJ, Sustainable Minds LCA tool
- Programming Languages: C, C++, Python, R, Tool Command Language (TCL), MATLAB, CCS3