Yasham Amar Mundada

814-769-0867 | yasham30.mundada@gmail.com | www.linkedin.com/in/yasham-mundada | Portfolio

Career Objective

Dedicated to advancing Additive Manufacturing (AM) through collaborative, research-driven approaches, ultimately delivering innovative and sustainable AM solutions that enhance product performance, drive application development, and promote environmental responsibility.

Education

Pennsylvania State University (PSU) State College, PA
Master of Science - *Additive Manufacturing and Design*, GPA: 3.97/4.0 *Aug 2022 - May 2024*
Awards: *Academic Excellence Award 2023, Graduate Fellowship and College of Engineering Scholarship*

Indian Institute of Technology Gandhinagar (IITGn) Gandhinagar, India
Bachelor of Technology (Honours) - *Materials Science and Engineering* *Jul 2017 - May 2021*

Professional Experience

Research and Development Intern, **EOS North America** *(Austin, TX)* August 2024 - Present
- Developed a novel framework for quality assurance and quality control of laser powder bed fusion (LPBF) parts by utilizing EOS real-time in-process sensors signals reducing testing time by 50%
- Programmed and operated EOS M290 for DoE-based experiments, including full cycle additive manufacturing tasks from design to post-processing of Titanium parts, adhering to standard operating procedures
- Generated technical reports, presentations, and guidelines for $1.5 Million+ America Makes federal projects

Materials Design Engineer Intern, **QuesTek Innovations** *(Evanston, IL)* June 2023 - August 2023
- Created a thermomechanical model to design heat treatment strategy for HY-80 cast replacement parts in wire arc additive manufacturing, optimizing thermal profiles to achieve desired material phases
- Designed novel high-temperature ceramic coating material for turbine blades using CALPHAD modeling; conducted fracture toughness testing that demonstrated an 18% improvement over current industry standards

Data Analyst, **IQVIA** *(Pune, India)* June 2021 - May 2022
- Performed big data analytics using Alteryx to calculate KPIs and present recommendations to upper management to drive strategic actions that resulted in a 13% increase in Aimmune's drug sales
- Developed Tableau dashboard to visualize KPIs and conducted weekly maintenance/ quality checks
- Received *Spotlight Award* for showing strong work ethics, professionalism, and competency in delivering quality client deliverables

Trainee, **CFEES-Defence Research Development Organization** *(Delhi, India)* May 2019 - July 2019
- Synthesized an 11% improved breathable hydrophilic polyurethane coating for firefighters' suits by experimenting with reactant compositions and processing conditions
- Assessed tensile strength, tear resistance, breathability of coating by ASTM standards, and thermal properties by interpreting DSC and TGA analysis

Skills and Certifications

Relevant Courses: Design for Additive Manufacturing (DfAM), Additive Manufacturing Processes
CAD Design/Modeling: SOLIDWORKS, nTopology (Topology Optimization), Fusion 360 (Generative Design)
Analysis: Materialize Magics, COMSOL, PanX, Thermo-Calc, Image-J, AVIZO
3D Printers: Prusa, Ender 3D, Form 3
Material Characterization: Optical Microscopy, Microhardness, Rheology, Metallography
Programming Languages: Python, MATLAB
Other Tools: OpenCV, LaTeX, Alteryx, MS-Office (Excel, Word, Powerpoint), Minitab

AM Research Projects

Failure Analysis and Quality Control of Additively Manufactured Samples (Thesis) Oct 2023 - May 2024
- Formulated a statistical function to predict failure location in laser powder bed fused AlSi10Mg specimens with 81% accuracy using pore features extracted from image processing (OpenCV) of Computed Tomography (XCT) data
- Validated failure locations through fractography study using optical microscopy on tensile-tested samples

Direct Ink Writing of Smart Ceramics and Development of Parameter Selection Map Aug 2022 - Sept 2023

- Built custom 3D printer to handle high-viscosity ceramics for electronic applications
- Conducted a DoE-based slurry composition study, managing powder batching, mixing, and thermal processing to optimize ceramic slurry parameters for crack-free, low-porosity prints
- Engineered a COMSOL simulation model of the DIW process to study the effect of process parameters on deposition reducing experiments by more than 75%

Design of Microstructure Selection Map for LDED of Al-Sc-Si Alloy Jan 2020 - May 2021

- Designed FORTRAN based Laser-Directed Energy Deposition simulation model of Al-Sc-Si alloy to understand key process variable like thermal profile and validated the model with experimental results
- Developed Python algorithm to predict the microstructure of printed parts for a diverse set of process parameters

Publications

- *Investigation of temperature distribution and solidification morphology in multilayered directed energy deposition of Al-0.5 Sc-0.5 Si alloy. International Journal of Heat and Mass Transfer, 186, p.122492.*
- *Microstructure engineering during directed energy deposition of Al-0.5 Sc-0.5 Si using heated build platform. International Journal of Heat and Mass Transfer, 202, p.123679.*

3D Printing Course Projects

Pixy Stick Container Challenge: Inspired by NASA's Mars Sample Return Mission Jan 2024 - May 2024

- Designed 3D printable lightweight, high-impact absorption container to sustain 100 ft fall with DfAM guidelines
- Employed systematic studies from concept generation to testing, including generative design, topology optimization, latticing, build analysis, post-processing, and cost analysis to optimize designs

3D Reconstruction and Printing of Hip Bone from MRI Data Aug 2022 - Dec 2022

- Executed MRI data segmentation of the hip region to accurately isolate the hip bone using 3D Slicer
- Developed a 3D reconstruction of the hip bone, optimizing the mesh surface for accuracy using Meshlab
- Successfully 3D printed the hip bone model, ensuring precise output for practical application in medical industry

Leadership and Teaching

Teaching Assistant, PSU

- ME201: Introduction to Thermal Science (300 Students) - (Spring'24 and Fall'23)

Teaching Assistant, IITGn

- ES 202: Introduction to Materials Science (180 Students) - (Fall'20)

Events-Coordinator, Amalthea '18 (Annual Technical Summit), IITGN

- Coordinated a total of 13 technical events and managed a team comprising of 30 members to conduct the events