Yasham Amar Mundada

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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 streamlined process for rapid qualification of laser powder bed fusion parts, using in-situ monitoring with thermal and optical data, reducing testing times by 50%
- Programmed and operated EOS M290 for DoE-based experiments, including full cycle additive manufacturing tasks from design to post-processing on Titanium parts, adhering to standard operating procedures

Materials Design Engineer Intern, **QuesTek Innovations** *(Evanston, IL)* June 2023 - August 2023
- Developed a new TEBC coating material for turbine blades using CALPHAD modeling, predicting reactions between coatings and particulates; performed fracture toughness testing that demonstrated an 18% improvement over current industry standards
- 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

Analyst, **IQVIA** *(Pune, India)* June 2021 - May 2022
- Performed big data analytics using Alteryx to calculate KPIs and presenting recommendations to upper Management to drive strategic actions that resulted in a 13% increase in Aimmune's drug sales
- Received *Spotlight Award* for showing strong work ethics, professionalism, and competency in delivering quality client deliverables

Key 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

Skills and Certifications

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

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.*

Teaching

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