Yasham Amar Mundada

814-769-0867 | ypm5149@psu.edu | www.linkedin.com/in/yasham-mundada | Portfolio

Education

Pennsylvania State University (PSU) State College, PA
Master of Science - Additive Manufacturing and Design, GPA: 3.95/4.0 *Aug 2022 - May 2024*
Awards: **Academic Excellence Award**, Graduate Fellowship and College of Engineering Scholarship
Relevant Courses: Design for AM, Finite Element, AM for Metallic Materials, Non-Destructive Evaluation
Teaching Assistant ME201 : Introduction to Thermal Science (300 Students) - (Spring'24 and Fall'23)

Indian Institute of Technology Gandhinagar (IITGN) Gandhinagar, India
Bachelor of Technology (Honours) - Materials Science and Engineering, GPA:3.58/4.0 *Jul 2017 - May 2021*
Relevant Courses: Advanced Materials, Mechanical Properties of Materials
Teaching Assistant ES202 : Introduction to Materials Science (150 Students)

Research Work and Course Projects

Study of Pore Dynamics and In-Situ Signals for Mechanical Property Prediction Oct 2023 - Present
- Characterized pore network in laser powder bed fused AlSi10Mg specimens using XCT data and image processing (OpenCV and AVIZO) to predict failure-related properties and uncover **process-structure-property** relationship
- Developing a data-driven approach to link in-situ photodiode signals with mechanical properties for quality control

Pixy Stick Container Drop Challenge: Inspired by NASA's Mars Sample Return Mission Jan 2024 - Present
- Learned AM design process in EDSGN562 course to develop lightweight and high-impact absorption container
- Employed systematic studies from concept generation to testing, including **generative design, topology optimization**, build analysis, post-processing, and cost analysis to optimize designs

Direct Ink Writing of Ceramics and Development of Parameter Selection Map Aug 2022 - Sept 2023
- Engineered a **custom extrusion-based 3D printer** for high-viscosity ceramics for electronic applications, acquired skills in parameter development, DOE, tool path design, material processing, and rheological analysis
- Crafted parameter selection framework using **COMSOL FEA** software fused with a ML-powered Gaussian Process model that achieved >**92%** prediction accuracy with fewer than 20 data points

Design Microstructure Selection Map of LDED of Al-0.5%Sc-0.5%Si Alloy Jan 2020 - May 2021
- Remodeled fusion welding CFD FORTRAN code into program for directed energy deposition process to understand key process variables like thermal profile and validated the model with experimental results
- Developed **Python** code to extract microstructure selection map to predict microstructure for LDED of Al-0.5%Sc-0.5%Si alloy with excellent accuracy for diverse operating parameters

Professional Experience

Materials Design Intern, **QuesTek Innovations** *(Evanston, IL)* June 2023 - August 2023
- Engineered ceramic thermal environmental barrier coating (T-EBC) for turbine blades using thermodynamic calculations (Thermo-Calc) for **NASA**, showcasing **˜18%** better fracture toughness over current state-of-the-art coatings
- Leveraged **CALPHAD** modeling and **QuesTek's ICMD** software to screen 6 best alloys from potential material database created for anode material of **Boston Metal**'s iron extraction process, facilitating informed material selection
- Established heat treatment strategy for **Wire Arc AM** of HY-80 steel with PanX for **America Makes** project
- Contributed to AM material cost estimation for a successful **$ 1.2 million ARPA-E** funded project

Analyst, **IQVIA** *(Pune, India)* June 2021 - May 2022
- Utilized Alteryx for big data analytics to uncover insights on target physicians, patients, marketing impact, and referrals for new drug launch for Aimmune (Nestle) in team of 5, boosting client's revenue by **20%** annually
- Received **Spotlight Award** for showing strong ownership towards the work and delivering quality client deliverable

Skills and Certifications

Design/Modeling: SOLIDWORKS (3D CAD), nTopology (Topology Optimization), Fusion 360 (Generative Design)
Analysis: AVIZO, Materialize Magics, Atlas 3D, COMSOL, PanX, Thermo-Calc, Image-J
Material Characterization: Optical Microscopy, Microhardness, Rheology, Metallography
Programming Languages: Python, MATLAB
LinkedIn learning certifications: Six Sigma Yellow Belt, Introduction to Geometric Dimensioning and Tolerancing
Automation skills: Rockwell PLC, SCADA (RSlogix), Overall Equipment Efficiency (OEE) dashboard development
Other Tools: OpenCV, LaTeX, Alteryx, MS-Office (Excel, Word, Powerpoint), Minitab

Publications

- Singh, A.K., **Mundada, Y.**, Bajaj, P., Wilms, M.B., Patil, J.P., Mishra, S.K., Jägle, E.A. and Arora, A., 2022. *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.* **Link**
- Singh, A.K., **Mundada, Y.**, Bajaj, P., Wilms, M.B., Patil, J.P., Mishra, S.K. and Arora, A., 2023. *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.* **Link**

Leadership and Extra-Curricular

Events-Coordinator, Amalthea '18 (Annual Technical Summit), IITGN Aug 2018 - Oct 2018

- Coordinated a total of 13 technical events and managed a team comprising of 30 members to conduct the events
- Conceptualized and planned 2 events from scratch which involved roles from preparing brain teasers to building relations with the guest professors, entrepreneurs and participating scholars of the events

Member, Industrial Relations and Project Council, IITGN Apr 2019 - May 2020

- Sought industrial projects for IITGN students and converted some major industries like ITC, TATA Chemicals etc
- Organized and moderated workshops, talks and events in collaboration with various industries