

Nooshin Rajabi

Knoxville, TN | 865-560-6072 | nrajabi@tennessee.edu | www.linkedin.com/in/nooshin-rajabi | [Nooshin Rajabi - Google Scholar](#)

EDUCATION

UNIVERSITY OF TENNESSEE, KNOXVILLE

Knoxville, TN

Master's in Mechanical Engineering (Double Minors in Computational Science and Statistics)

2023-Present

- GPA: 3.97/4.00
- Research in Optimization of large-scale **Additive Manufacturing** processes using Physics-Informed **Neural Network** (PINNs)
- Relevant Coursework:** Applications of ML in Materials Science, Applications of Data Science, Principles of Additive Manufacturing, Fracture Mechanics, Statistics for Research I & II.

SHARIF UNIVERSITY OF TECHNOLOGY

Tehran, Iran

Bachelor of Engineering, Major in Materials Science and Engineering

2018-2023

- Ranked top 1% in the nationwide entrance exam.
- Co-authored 2 journal papers focusing on the fusion of Machine Learning and Computer Vision with Materials Science.

FELLOWSHIPS & GRANTS

Graduate Fellowship, University of Tennessee Knoxville

2023-Present

- Fellowship awarded to exceptional graduate students - (40000\$)

EWI Industry Grant, Research funding support

2025-Present

- Development of a real-time, physics-aware monitoring framework for Wire Arc Additive Manufacturing (WAAM) using multimodal data (arc current, voltage, infrared imaging) for quality assurance - (50000\$)

AI Tennessee Initiative Grant, Research funding support

2023-2024

- Development of a multimodal monitoring framework for additive manufacturing processes - (60000\$)

EXPERIENCE

UNIVERSITY OF TENNESSEE

Knoxville, TN

Graduate Research Assistant - Complex Systems Laboratory

2023 - Present

- Design and develop optimization algorithms for Additive Manufacturing (AM) processes, including polymer-based (FDM) and metal-based (WAAM). Improved process efficiency, material utilization, and product quality, leading to reduced costs and enhanced customization for industries such as aerospace, automotive, and energy

MAPNA TURBINE ENGINEERING AND MANUFACTURING

Tehran, Iran

Welding Engineer Intern

March 2022 - March 2023

- Optimized robotic welding parameters for efficient part production of MGT-40 gas turbine.
- Process parameter optimization of Ni-based superalloys for L-PBF additive manufacturing process.

CNAM (Research Center of Nanostructured and Advanced Materials)

Tehran, Iran

Machine Learning Researcher/Developer

Feb 2021 - Sep 2022

- Integrating Machine Learning and Computer Vision with the realm of Materials Science and Engineering.
- Co-authored 2 journal papers that delve into the practical applications of Machine Learning in the field of Materials Science.

SKILLS

Technical Skills:

- Additive Manufacturing Processes** | WAAM, FDM, PBF, and BAAM (Big Area AM)
- Process Monitoring & Control** | Thermal Imaging (Infrared Cameras, Melt Pool Monitoring), Acoustic Emission & Vibration Signal Analysis, Process Parameter Optimization
- Data-Driven Methods in AM** | Physics-Informed Neural Networks (PINNs) for process modeling, Multi-Modal Data Fusion, Time-Series Analysis of sensor data, and MLOps.
- Materials Science & Characterization** | XRD, SEM, TEM, Mechanical Testing, Non-Destructive Testing, Fracture Mechanics
- Engineering Tools & Software** | Python, R, Matlab, ANSYS

Soft Skills | Communication, Leadership, Problem-solving, Teamwork, Time Management, Creativity, Adaptability, Work Ethic, Attention to Detail, Interpersonal Skills

PROJECTS

Improved quality control in Laser Powder Bed Fusion by utilizing tomography and imaging techniques to identify porous, non-conforming parts.

Jan 2024-May 2025

- Analyzed data to identify correlations between processing conditions and component quality.
- Provided recommendations on powder suppliers, reuse guidelines, and manufacturing processes to enhance product quality.
- Optimized the pre-trained SVR model using Simulated Annealing, refining key parameters like power and speed to maintain porosity below the threshold, enhancing process control and product quality.

Physics-Informed Neural Networks (PINNs) for Heat Transfer Modeling in Big Area Additive Manufacturing (BAAM)

2024-Present

- Developed a PINN-based framework to solve the governing PDEs of transient heat transfer in BAAM processes.
- Modeled cooling behaviour and temperature distribution of the part, incorporating process parameters and boundary conditions.

PUBLICATIONS

- SCAPS Empowered Machine Learning Modelling of Perovskite Solar Cells: Predictive Design of Active Layer and Hole Transport Materials (*Photonics* | *M. Hasanzadeh Azar et al.*) ([Link](#))
- Functionalization of metal-organic frameworks with metallic nanoclusters for ultra-sensitive monitoring of morphine in biological fluids (*Biosensors and Actuators B: Chemical* | *M. Saedi et al.*) ([Link](#))

LEADERSHIP & SERVICE

RTPI (Rocky Top President Institute) Leadership Program

2024

- 6-week intensive leadership program, University of Tennessee Knoxville), with emphasis on emotional intelligence and values-based leadership.

Graduate Student Senate (GSS)

2024

- **Senator**, MABE Department, Represented student concerns and collaborated with university administration to improve graduate student experience.
- Recipient of the **Excellence in Community Engagement Award**, Graduate Student Senate. s

Vice President, Iranian Student Association (ISA)

2024-Present

- Elected for two consecutive years; led initiatives supporting Iranian students with academic, social, and financial challenges.
- Founded a **Graduate Scholarship Fund** within ISA to provide financial support for students in need.

REFERENCES

Available upon request