

Professional Summary

PhD student in Computer Science at Texas Tech, working at the intersection of robot learning, control theory, and information theory. My research spans intrinsic motivation, multi-agent systems, generative modeling, and acoustic wave control. Prior research experience at NASA and Zuse Institute Berlin.

Education

Doctor of Philosophy in Computer Science

Texas Tech University, Edward E. Whitacre Jr. College of Engineering

Lubbock, Texas

January 2025 - Present

- **Awards:** Koh Family Scholarship – **\$152,000 over 4 years of doctoral study**; one of two recipients in 2025 in the Edward E. Whitacre Jr. College of Engineering.
- **Leadership:** Lab Captain.
- **Grants:** NSF ACCESS Explore Allocation, PI – “Controllable Information Production” (CIS260238).

Master of Science in Artificial Intelligence

San Jose State University, Charles W. Davidson College of Engineering

San Jose, California

January 2022 - May 2024

- **Awards:** Research and Innovation Student RSCA Fellowship.

Bachelor of Science in Data Science (Cum Laude)

Eastern Michigan University, College of Arts & Sciences

Ypsilanti, Michigan

August 2017 - December 2021

- **Awards:** Optimize Eastern Startup Pitch Competition Winner, Perry S. Brundidge Scholarship, Emerald Scholarship.

Publications

- **T. Shah, S. Tiomkin; Emergence of Physical Intelligence via Controllable Information Production. *NeurIPS 2026, Oral (top 0.4% of submissions).***
- **T. Shah, I. Nemenman, D. Polani, S. Tiomkin; Multi-Agent Empowerment and Emergence of Complex Behavior in Groups. *CoLLAs 2026.***
- J. Warner, **T. Shah**, P. Leser, G. Bomarito, J. Pribe, M. Stanley; Latent Generative Modeling of Random Fields from Limited Training Data. *arXiv preprint, 2026.*
- **T. Shah**, N. Smilovich, S. Gerges, F. Amirkulova, S. Tiomkin; Acoustic Wave Manipulation Through Sparse Robotic Actuation. *ICRA 2025.*
- **T. Shah**, M. Stanley, J. Warner; Generative Modeling of Microweather Wind Velocities for Urban Air Mobility. *IEEE Aerospace Conference 2025.*
- **T. Shah**, et al.; Reinforcement Learning Applied to Metamaterial Design. *J. Acoust. Soc. Am., 2021.*

Work Experience

National Aeronautics and Space Administration

Research Intern

Hampton, Virginia

June 2024 - December 2024

- Developed generative models (flow matching) for spatiotemporal urban microweather wind fields from limited data.
- One of three interns to receive the Fall 2024 NASA agency-wide “Shining Star Award”.

San Jose State University

Research Assistant

San Jose, California

September 2023 - May 2024

- Developed an open-source Julia simulator for acoustic wave scattering and ML-based wave control.

Instructional Student Assistant

February 2022 - May 2022

- Taught lab sessions, prepared exercises, and graded assignments for a course on deep learning in engineering.

Volunteer Visiting Scholar

June 2020 - June 2021

- Collaborated in an interdisciplinary partnership to apply reinforcement learning to inverse design problems in acoustics.

Zuse Institute Berlin (ZIB)

Research Intern

Berlin, Germany

June 2022 - August 2022

- Designed a method for landmark detection on 3D mesh data structures using graph neural networks.

Technical Skills

Languages: Python, Julia, C++

Developer Tools: Git, Slurm, Anaconda, Linux

Technologies/Frameworks: PyTorch, JAX, Flax, MuJoCo-MJX

Skills: Optimal Control Theory, Deep Learning, GenAI, RL, SciML, Scientific Writing