

DANIEL SAEEDI

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RESEARCH AREAS

Agentic AI, Machine Learning for Scientific Discovery, AI Safety & Alignment, Generative Models, Diffusion Models, Natural Language Processing

EDUCATION

Ph.D. in Electrical and Computer Engineering, *Georgia Institute of Technology* Sep 2023 - Present

- **Advisor:** [Prof. Amirali Aghazadeh](#)
- **Collaborative Specialization:** Machine Learning and Deep Learning for Science
- **Relevant Coursework:** Generative and Geometric Deep Learning (A), Statistical Machine Learning (A)

M.S. in Electrical and Computer Engineering, *Georgia Institute of Technology* Expected May 2026

- **Advisor:** [Prof. Amirali Aghazadeh](#)
- **Thesis:** Hypothesis Generation from High-Dimensional Signals with Multi-Agent AI: Astrobiology as a Model System

B.S. in Computer Engineering, *University of Tehran* GPA: A - 17.98/20 Sep 2019 - Jun 2023

- **Relevant Coursework:** Neural Networks and Deep Learning, Artificial Intelligence, Algorithm Design, Data Structures and Algorithms, Advanced Programming, Differential Equations

TECHNICAL SKILLS

Machine Learning Tools: PyTorch, Tensorflow, Keras, NLTK, Hugging Face Transformers Library (BERT, ALBERT, RoBERTa, GPTs), LangChain, LangGraph, Diffusers

Programming Language & Tools: Python, C/C++, Java, R, MATLAB, Numpy, Pandas, scikit learn, Git

EXPERIENCE

Graduate Research Assistant, Georgia Institute of Technology Sep 2023 - Present

Advisor: [Prof. Amirali Aghazadeh](#)

- Collaborating with [Microsoft Discovery team](#) to scale AstroAgents++ leveraging enterprise AI tools for automated hypothesis generation and scientific discovery workflows in astrobiology research.
- Developed [AstroAgents](#), a **multi-agent AI system** that autonomously generates and tests scientific hypotheses from mass spectrometry data, advancing origin-of-life research using NASA's meteorites and soil samples. This work has garnered media coverage from [Nature News](#), [Georgia Tech News](#), [Astrobiology.com](#), and a prominent social [media commentator](#).
- Built [LifeTracer](#), a machine learning framework that accurately classifies meteoric vs. terrestrial samples and identifies biosignatures for future sample return missions (i.e., Mars), which will be published in PNAS Nexus and selected for press coverage.
- Developed [cryoSENSE](#), a **compressive sensing framework** for high-throughput cryo-EM that combines sparse priors and **diffusion-based generative models** to achieve 2.5× data throughput increase while preserving atomic resolution, addressing critical bandwidth bottlenecks in structural biology. **Accepted to CVPR 2026.**
- Developed [ProtoMech](#), a **mechanistic interpretability framework** for discovering computational circuits in protein language models using cross-layer transcoders. ProtoMech identifies compact circuits (<1% of the latent space) that recover up to 79% of ESM2's performance and align with known structural and functional motifs, enabling **steerable** high-fitness protein design.

Research Fellow, [Fatima Fellowship 2022](#)

May 2022 - Dec 2022

Mentor: [Dr. Abubakar Abid](#)

- Identified critical limitations in state-of-the-art debiasing techniques (SentDebias, INLP) for masked language models, revealing failure modes in real-world applications.
- Created [PyDebiaser](#), an open-source Python library implementing seven debiasing methods for Transformers.

TEACHING EXPERIENCE

[Generative and Geometric Deep Learning at Georgia Tech](#), Head Teaching Assistant

Fall 2024-2025

- Mentored students on course projects involving diffusion models, graph neural networks, and generative architectures
- Provided technical support and guidance on implementing state-of-the-art generative AI methods

Digital Design Lab at Georgia Tech, Head Teaching Assistant

Spring 2024

- Managed a team of teaching assistants and supervised over 50 students in digital circuit design projects
- Led hands-on lab sessions on FPGA programming and hardware description languages

PUBLICATIONS

- D. Tsui, **D. Saeedi**, K. Talreja, A. Aghazadeh. [Protein Circuit Tracing via Cross-layer Transcoders](#). *Arxiv*, Feb 2026. [[Project Website](#)]
- **D. Saeedi**, Zain Shabeeb, Darin Tsui, Vida Jamali, Amirali Aghazadeh. [cryoSENSE: Compressive Sensing Enables High-throughput Microscopy with Sparse and Generative Priors on the Protein Cryo-EM Image Manifold](#). *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2026. [[Project Website](#)]
- **D. Saeedi**, D. Buckner, T. Walton, J. C. Aponte, A. Aghazadeh. [Discriminating abiotic and biotic organics in meteorite and terrestrial samples using machine learning on mass spectrometry data](#). *PNAS Nexus*, 4(11), pgaf334, Nov 2025. [[Project Website](#)]
- **D. Saeedi**, D. K. Buckner, J. C. Aponte, A. Aghazadeh. [AstroAgents: Agentic AI for Scientific Discovery](#). *ICLR 2025 Workshop AgenticAI and AMS 2025 conference* (Oral Presentation), Feb 2025. [[Project Website](#)]
- D. K. Buckner, **D. Saeedi**, T. Walton, J. C. Aponte, A. Aghazadeh. [Lunar and Planetary Science Conference](#). *Oral Presentation*, March 2025.
- José C. Aponte, Hannah L. McLain, **Daniel Saeedi**, Amirali Aghazadeh, Jamie E. Elsilá, Daniel P. Glavin, Jason P. Dworkin. [Challenges and Opportunities in Using Amino Acids to Decode Carbonaceous Chondrites and Asteroids Parent Body Processes](#). *Astrobiology Journal*
- **D. Saeedi**, A. Kheirandish, S. Saeedi, H. Sahour, A. A. Panahi, I. Naeeni. [GT-NLP at SemEval-2025 Task 11: EmoRationale, Evidence-Based Emotion Recognition via Retrieval-Augmented Generation](#). *SemEval-2025*, July 2025.
- **D. Saeedi**, A. Panahi, S. Saeedi, A. Fong. [Effective Data Augmentation Methods for Multi-label Classification Language Understanding Tasks](#). *Proceedings of 16th International Workshop on Semantic Evaluation (SemEval)*, 2022.

FELLOWSHIPS

- AI Safety Research Fellow at Georgia Tech — [AISF](#) Sep 2025
- Fatima Fellowship — research in machine learning 2022

MEDIA & PRESS

- [The Conversation](#): “LifeTracer News Coverage” Dec 2025
- [Nature](#) News feature on AstroAgents May 2025
- [Georgia Tech News](#): “How Agentic AI Is Rethinking the Origins of Life on Earth” Jun 2025

AWARDS & RANKINGS

- 1st place, Employment category — Iran Web Festival (among hundreds of competitors) 2014
- WorldSkills Olympiad, Web Development — 4th place 2016

TALKS & PRESENTATIONS

- **D. Saeedi**, A. Stockton, A. Aghazadeh. [AstroAgents: Agentic AI at the dawn of life](#). *Generative AI Summit 2025 at Georgia Tech*, Oct 2025.
- **D. Saeedi**, D. K. Buckner, J. C. Aponte, A. Aghazadeh. [AstroAgents: Agentic AI for Scientific Discovery](#). *ICLR 2025 Workshop AgenticAI and AMS 2025 conference* (Oral Presentation), Feb 2025. [[Project Website](#)]