




# SAM SCHEELE

[sam.scheele@yahoo.com](mailto:sam.scheele@yahoo.com) | [sscheele.github.io](https://github.com/sscheele) | [sam-scheele](https://www.linkedin.com/in/sam-scheele) | [sscheele](https://www.github.com/sscheele)

**Summary:** Computer scientist specializing in robotics and machine learning with a proven track record of building AI-driven systems for disaster relief. Passionate about leveraging advanced algorithms to solve real-world challenges.

## EXPERIENCE

- **MIT Lincoln Laboratory**  Feb. 2024 - Present  
Lexington, MA  
*Associate Member of Technical Staff*
  - Conceived and pitched a new program within first ten weeks of employment, **receiving \$200k in initial funding**. Currently acting as **Principal Investigator** on the program, managing both technical and financial program aspects.
  - Demonstrated aptitude for transforming research into real-world impact by serving as primary technical contributor in three projects **successfully deployed to FEMA, HHS, and USAF**.
  - **Boosted development speed by 25%** group-wide by spearheading effort to host internal code completion models.
  - **Modernized group workflows** by initiating DevOps and MLOps efforts, deploying first Grafana dashboards, first experiment tracker, first CI/CD pipeline, custom logging solutions, first model server, and many other services, deployed with Docker.
  - Trained and released open-source models and dataset for classification of aerial disaster imagery. Models reached **more than 5k downloads**.
  - Developed machine learning model to **predict earthquakes using ionospheric data with 87.7% accuracy**. Accelerated iteration time by **more than 100x** by implementing **multi-node distributed training** and improving data coherency to reduce frequency of disk accesses.
  - RAG projects: developed, deployed, and **iterated based on user interviews** for several projects utilizing Retrieval-Augmented Generation (RAG) and agentic RAG for sponsored and internal "blue sky" projects.
  - Served as Lead Instructor of MIT Beaver Works Summer Institute class in Remote Sensing for Disaster Relief, teaching elements of GIS analysis, remote sensing, machine learning, logistics, and more. **Led a team** of two co-instructors and five TAs to create course material and instruct a class of high school students.
  - Presented findings at conferences, including International Humanitarian Technologies Conference, and directly to existing and prospective sponsors.
- **Internships** Summer 2018, 2019  
*Intern*
  - **The Aerospace Corporation** : Generated challenging synthetic datasets using Unreal Engine for training computer vision algorithms on RGB-D data.
  - **Georgia Tech Research Institute** : Implemented simulated compliance by independently deriving nonsingular compliant control code on 6dof robotic arm. Final product was able to faithfully recreate vector graphics by drawing them on a whiteboard.
- **(TA) Robotics and Perception Class, Georgia Institute of Technology** Fall 2021  
Atlanta, GA  
*Head TA*
  - Led a team of 10 TAs to teach the principles of robotics software to a class of 150 students at Georgia Tech.
  - Designed course content, coordinated TA efforts, and modified both internal and student-facing course policies to maximize course legibility and minimize administrative overhead.
  - Performed at the highest possible tier on all 12 student evaluation metrics on end-of-semester survey.

## EDUCATION

- **Georgia Institute of Technology** August 2021 - July 2023  
Atlanta, GA  
*MS Computer Science, specialization in Robotics and Computational Perception*
  - GPA: 4.0/4.0 (Highest Honors)
  - Thesis: "Anticipatory and Reactive Motion Planning"
- *BS Computer Science, minor in Robotics* August 2017 - July 2021
  - GPA: 3.8/4.0 (Highest Honors)

## PROJECTS AND VOLUNTEER WORK

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- **Open Source Contributor: Helix Editor**

Spring 2023

Tools: Rust



- Contributed to code and documentation of Helix, a modal text editor and IDE used by tens of thousands of people. Learned the systems programming language Rust in order to make meaningful contributions.
- Extended editor functionality by adding feature to respect gitignore files, enabling greater project flexibility.
- Optimized performance by skipping rendering for graphemes not in editor viewport.

- **Prototyping Instructor, Georgia Tech Invention Studio**

2021-2023

Tools: waterjet, FDM and resin 3D printers, laser cutters, manual mill, wood shop, metal shop, electronics bench

- Assisted students and faculty on a volunteer basis with designing and building prototypes and proofs-of-concept at the Georgia Tech Invention Studio, the largest student-run prototyping facility in the US.
- Provided training on many of the tools available in the Studio with the goal of empowering users.

- **Daily Metrics Tracker**

2024-Present

Tools: React native web



- Developed a browser-based web application to track, impute, and correlate user-defined metrics, enabling seamless creation and visualization of complex data relationships. Initially conceived as an experiment in AI-driven development (leveraging Aider and Claude 3.5 Sonnet), the tool has evolved into a robust, daily-use solution for advanced metric tracking and analysis.

## PUBLICATIONS

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Abhinav Jain, Daphne Chen, Dhruva Bansal, **Sam Scheele**, Mayank Kishore, Hritik Sapra, David Kent, Harish Ravichandar, and Sonia Chernova (2020). *Anticipatory Human-Robot Collaboration via Multi-Objective Trajectory Optimization*. arXiv: [2006.03614](https://arxiv.org/abs/2006.03614) [cs.RO]. URL: <https://arxiv.org/abs/2006.03614>.

Jessica Reid, Jeffrey Liu, **Sam Scheele**, Bhavani Ananthabhotla, Matthew Weiss, and Dieter Schuldt (Dec. 2021). "QuakeCast: Forecasting Earthquakes from Preseismic Ionospheric Signals Using Machine Learning Refinements and Advances". In: *AGU Fall Meeting Abstracts*. Vol. 2021, NH35D-0494, NH35D-0494.

**Sam Scheele** (2023). "Anticipatory and Reactive Motion Planning". MS Thesis. Georgia Institute of Technology.

**Sam Scheele**, Pierce Howell, and Harish Ravichandar (2023). *Fast Anticipatory Motion Planning for Close-Proximity Human-Robot Interaction*. arXiv: [2305.11978](https://arxiv.org/abs/2305.11978) [cs.RO]. URL: <https://arxiv.org/abs/2305.11978>.

Emma McDaniel, **Sam Scheele**, and Jeff Liu (2024). *Zero-Shot Classification of Crisis Tweets Using Instruction-Finetuned Large Language Models*. arXiv: [2410.00182](https://arxiv.org/abs/2410.00182) [cs.CL]. URL: <https://arxiv.org/abs/2410.00182>.

**Sam Scheele**, Katherine Picchione, and Jeffrey Liu (2024). *LADI v2: Multi-label Dataset and Classifiers for Low-Altitude Disaster Imagery*. arXiv: [2406.02780](https://arxiv.org/abs/2406.02780) [cs.CV]. URL: <https://arxiv.org/abs/2406.02780>.

## SKILLS


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- **Programming Languages:** Python, Rust, C/C++, Javascript, Java, Julia, Zig
- **Data Science & Machine Learning:** Pytorch, MLFlow, Huggingface, Pandas, scikit-learn, LLMs, RAG, Computer Vision, data processing/discovery, model deployment
- **DevOps & Version Control:** Git, Docker, CI/CD, Agile
- **Mathematical & Statistical Tools:** pyomo, numpy/cupy, optimization algorithms, Markov processes, Kalman filters, Koopman operators
- **Research Skills:** Mathematical derivations, algorithm development, technical blogging, experimental design, data visualization, literature review, problem-solving, teaching and communication

## ADDITIONAL INFORMATION

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**Languages:** Spanish (Conversational), Italian (Beginner)

**Interests:** Blog , mathematical puzzles, meditation, language learning, cooking