

# HARRISON DELECKI

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## Education

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<b>Stanford University</b> , PhD Candidate <i>Aeronautics and Astronautics, GPA: 4.0</i> Thesis: Sampling and Estimation for the Validation of Safety-critical Autonomous Systems	<b>September 2022 – June 2025 (Exp.)</b> <i>Stanford, CA</i>
<b>Stanford University</b> , MS <i>Aeronautics and Astronautics, GPA: 4.0</i>	<b>September 2020 – May 2022</b> <i>Stanford, CA</i>
<b>Georgia Institute of Technology</b> , BS <i>Aerospace Engineering, Computer Science Minor, GPA: 4.0</i>	<b>August 2015 – May 2020</b> <i>Atlanta, GA</i>

## Research

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<b>Stanford Intelligent Systems Laboratory</b> <i>Graduate Researcher</i>	<b>November 2020 – Present</b> <i>Stanford, CA</i>
<ul style="list-style-type: none"><li>• <b>State-dependent Adaptive Importance Sampling</b> ↗ A novel method for efficiently estimating failure probabilities in safety-critical autonomous systems using state-dependent importance sampling.</li><li>• <b>Generative Models for Black-box Safety Validation</b> ↗ An algorithm that trains deep generative models to scale safety validation to complex, high-dimensional autonomous systems with no knowledge of the system internals.</li><li>• <b>Entropy-regularized Planning</b> ↗ An offline POMDP solver with entropy-regularized objectives to enable more robust planning under model uncertainty.</li><li>• <b>Model-based Safety Validation</b> ↗ A framework for safety validation as probabilistic inference, enabling generalization of sampling methods to new validation problems.</li><li>• <b>Stress Testing Perception in Adverse Weather</b> ↗ Reinforcement learning methods to find failures in LIDAR-based object detection, tracking and trajectory prediction modules for autonomous driving under adverse weather.</li><li>• <b>Multi-objective Planning for Subterranean Exploration</b> ↗ Collaboration with NASA JPL's team CoStar to develop POMDP-based global planning solution for robotic subterranean exploration in the DARPA SubT Challenge.</li></ul>	

## Industry Experience

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<b>Terra AI</b> <i>ML/AI Intern</i>	<b>June 2024 – September 2024</b> <i>Sunnyvale, CA</i>
<ul style="list-style-type: none"><li>• Developed foundation models for geological inference based on geophysical observations of the subsurface.</li></ul>	
<b>Motional</b> <i>Safety Engineering Intern</i>	<b>June 2022 – September 2022</b> <i>Boston, MA</i>
<ul style="list-style-type: none"><li>• Integrated reinforcement learning-based safety validation with industry AV stack and simulation to enable efficient safety analysis.</li></ul>	
<b>The Aerospace Corporation</b> <i>Navigational Systems Intern</i>	<b>June 2020 – September 2020</b> <i>El Segundo, CA</i>
<ul style="list-style-type: none"><li>• Implemented fast satellite selection algorithm for near-real-time GNSS performance assessment platform.</li></ul>	
<b>MIT Lincoln Laboratory</b> <i>Summer Research Assistant</i>	<b>May 2018 – August 2018, May 2019– August 2019</b> <i>Lexington, MA</i>
<ul style="list-style-type: none"><li>• Developed software for tactical space situational awareness applications.</li></ul>	
<b>MIT Lincoln Laboratory</b> <i>Student Co-Op</i>	<b>June 2017 – December 2017</b> <i>Lexington, MA</i>
<ul style="list-style-type: none"><li>• Conducted design and analysis of metal 3D printed propellant management device for small satellites.</li></ul>	

## Skills

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**Programming Languages:** Julia, Python, C/C++, Matlab, HTML/CSS, JavaScript, SQL  
**Technologies/Frameworks:** Linux, ROS, GitHub, AWS, PyTorch/TensorFlow

## Awards and Fellowships

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<b>National Science Foundation Graduate Research Fellowship</b>	<b>2022</b>
<b>Donnell Dutton Outstanding Senior in Georgia Tech Aerospace:</b> For highest GPA in graduating class.	<b>2020</b>
<b>Mathew Isakowitz Fellowship:</b> For outstanding students interested in commercial space industry.	<b>2020</b>

## Teaching and Mentorship

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**Teaching Assistant** for AA228 AA222. Wrote programming assignments, held weekly office hours for 450 students. **2022-2025**  
**Research Mentor** for Agam Bhatia (stress-testing LLMs), Jacob Frausto (neural surrogates for validation), Yash Kadadi (transfer learning), Ellie Prince (decomposition for scalable decision-making), and Selena Sun (perception validation).