

# David Millard

<https://dmillard.github.io>

Ph.D. Candidate  
Robotics Embedded Systems Lab  
Computer Science Department  
University of Southern California

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## Education

<b>University of Southern California</b> Los Angeles, California	August 2018 - May 2023 (expected)
Ph.D. Candidate, Department of Computer Science	GPA 4.00/4.00
Advised by Prof. Gaurav Sukhatme	
<b>University of Georgia</b> Athens, Georgia	August 2010 - May 2014
Bachelor of Science, double major in Math and Computer Science	GPA 3.94/4.00

## Awards

**NASA Space Technology Research Fellowship** Four-year graduate fellowship, awarded for NSTRF proposal *Interpretable Predictive Planning for Human-Robot Teams*

**Computer Science Outstanding Undergraduate with Distinction** University of Georgia. Awarded to the best student in the Computer Science department.

**Foundation Fellowship** The University of Georgia's top academic undergraduate four-year scholarship.

## Publications

Heiden, Eric, Christopher E Denniston, et al. (May 2022). "Probabilistic Inference of Simulation Parameters via Parallel Differentiable Simulation". In: (Philadelphia, USA).

Millard, David, James A Preiss, et al. (Sept. 2022). "Parameter Estimation for Deformable Objects in Robotic Manipulation Tasks". In: (Geneva, Switzerland).

Preiss, James A et al. (May 2022). "Tracking Fast Trajectories with a Deformable Object using a Learned Model". In: (Philadelphia, USA).

Heiden, Eric, David Millard, Erwin Coumans, Yizhou Sheng, et al. (Sept. 2021). "NeuralSim: Augmenting differentiable simulators with neural networks". In: *IEEE International Conference on Robotics and Automation* (Xi'an, China), pp. 9474–9481.

Heiden, Eric, David Millard, Erwin Coumans, and Gaurav S Sukhatme (July 2020a). "Augmenting differentiable simulators with neural networks to close the sim2real gap". In: *arXiv preprint arXiv:2007.06045*.

– (Dec. 2020b). "Sparse-Input Neural Network Augmentations for Differentiable Simulators". In:

Millard, David, Eric Heiden, et al. (Jan. 2020). "Automatic differentiation and continuous sensitivity analysis of rigid body dynamics". In: *arXiv preprint arXiv:2001.08539*.

Heiden, Eric, David Millard, and Gaurav Sukhatme (June 2019). “Real2sim transfer using differentiable physics”. In: *RSS 2019 Workshop: Workshop on Closing the Reality Gap in Sim2real Transfer for Robotic Manipulation*.

Heiden, Eric, David Millard, Hejia Zhang, et al. (May 2019). “Interactive differentiable simulation”. In: *arXiv preprint arXiv:1905.10706*.

## Work experience

**Google Brain (Robotics at Google)** New York, New York January 2020 - June 2020  
Research Intern, Robotics  
Research projects in differentiable physics simulation, with applications to identification and control of robotic systems. Resulted in publication.

**Iron Ox** San Mateo, California May 2019 - August 2019  
Robotics Intern, Robotics  
Designed and implemented software for kinodynamically limited trajectory optimization for industrial arm planning in a robotic agriculture context.

**Robotics Embedded Systems Lab** University of Southern California August 2018 -  
*Graduate Research Assistant*

**X (formerly Google X)** Mountain View, California December 2015 - June 2018  
Software Engineer, Robotics  
Built perception systems for mobile base navigation  
Designed and developed sequence learning models for dynamic obstacle prediction and avoidance

**Microsoft Corporation** Redmond, Washington July 2014 - November 2015  
Software Development Engineer, Windows 10 Photos  
Developed photo viewer application served to millions of customers (C#/C++)

## Leadership

**GradAMP USC Mentorship Program** 2021-  
Mentored undergraduates interested in research and graduate school during applications for internships and graduate programs.

**Greyhills Academy Robotics Pilot** Tuba City, Navajo Nation, Arizona April 2018  
With another Googler, organized and taught a two day robotics pilot course for students living in the Navajo nation.  
Developed a continuing partnership between Google and Greyhills academy, and set the schedule for future collaboration.

**UGA Mathcounts Outreach** University of Georgia  
*President* August 2013 - May 2014  
Coordinated board meetings and set organizational direction for a 200+ member student volunteer tutoring organization.  
Expanded reach from 8 to 11 middle schools and increased focus on students in need.  
*Volunteer Coordinator* August 2012 - May 2013  
Coordinated 200+ student volunteers at 8 local middle schools, distributing curriculum materials and establishing contact with school administrations.

**Free IT Athens** Athens, Georgia August 2009 - May 2014  
*Staff Member*

Trained volunteers in building computers and interacting with customers.  
Taught classes in basic computer use to low-income Athens residents.