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

University of Southern California Los Angeles, California — August 2018 - August 2023 (expected)
Ph.D. Candidate, Department of Computer Science — GPA 4.00/4.00
Advised by Prof. Gaurav Sukhatme

University of Georgia 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, awarded to approximately 20 students per class.

Publications

[1] E. Heiden, C. E. Denniston, D. Millard, F. Ramos, and G. S. Sukhatme, "Probabilistic inference of simulation parameters via parallel differentiable simulation," presented at the IEEE Conference on Robotics and Automation (Philadelphia, USA), May 2022.

[2] D. Millard, J. A. Preiss, J. Barbič, and G. S. Sukhatme, "Parameter estimation for deformable objects in robotic manipulation tasks," presented at the International Symposium on Robotics Research (Geneva, Switzerland), Sep. 2022.

[3] J. A. Preiss, D. Millard, T. Yao, and G. S. Sukhatme, "Tracking fast trajectories with a deformable object using a learned model," presented at the IEEE Conference on Robotics and Automation (Philadelphia, USA), May 2022.

[4] E. Heiden, D. Millard, E. Coumans, Y. Sheng, and G. S. Sukhatme, "Neuralsim: Augmenting differentiable simulators with neural networks," presented at the IEEE International Conference on Robotics and Automation (Xi'an, China), Sep. 2021.

[5] E. Heiden, D. Millard, E. Coumans, and G. S. Sukhatme, "Augmenting differentiable simulators with neural networks to close the sim2real gap," *arXiv preprint arXiv:2007.06045*, Jul. 2020.

[6] E. Heiden, D. Millard, E. Coumans, and G. S. Sukhatme, "Sparse-input neural network augmentations for differentiable simulators," presented at the NeurIPS 2020 Workshop on Differentiable Computer Vision, Graphics, and Physics in Machine Learning (Virtual), Dec. 2020.

[7] D. Millard, E. Heiden, S. Agrawal, and G. S. Sukhatme, "Automatic differentiation and continuous sensitivity analysis of rigid body dynamics," *arXiv preprint arXiv:2001.08539*, Jan. 2020.

[8] E. Heiden, D. Millard, and G. Sukhatme, "Real2sim transfer using differentiable physics," presented at the RSS 2019 Workshop on Closing the Reality Gap in Sim2real Transfer for Robotic Manipulation (Freiburg, Germany), Jun. 2019.
[9] E. Heiden, D. Millard, H. Zhang, and G. S. Sukhatme, "Interactive differentiable simulation," *arXiv preprint arXiv:1905.10706*, May 2019.

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 indetification and control of robotic systems. Resulted in publication.

Iron Ox San Mateo, California May 2019 - August 2019
Roboticist Intern, Robotics
Designed and implemented software for kinodynamically limited trajectory optimziation 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.