Curriculum Vitae

+1 650-725-3489 (work) Durand 268, 496 Lomita Mall, Stanford CA, 94301 Grace Gao

Academic Appointments Associate Professor, Stanford University Department of Aeronautics and Astronautics Department of Electrical Engineering (by courtesy)	2024–present
Director, Navigation and Autonomous Vehicles Laboratory (Stanford NAV Lab) Co-Director, Stanford Center for AI Safety	
Assistant Professor, Stanford University	2019 - 2024
Assistant Professor University of Illinois at Urbana-Champaign Department of Aerospace Engineering	2012–2019
with affiliate appointments in: Coordinated Science Laboratory Department of Electrical and Computer Engineering Department of Computer Science Information Trust Institute Computational Science and Engineering	
Education Ph.D. Electrical Engineering Stanford University	2004–2008
M.S. Electronics Engineering Tsinghua University	2001-2003
B.S. Mechanical Engineering Tsinghua University	1997 – 2001
Other Work Experience Research Associate GPS Laboratory, Stanford University	2008–2012
Research Intern SiRF Technology, Inc.	Summer 2006
R&D Engineer IBM China Research Laboratory	2003–2004
Research Intern Microsoft Research Asia	2002 - 2003

Selected Honors and Awards

Research Award	S	
2023, 2022, 2021,	Best Paper/Presentation of the Session Award, ION GNSS+ Conference	
2020, 2019, 2018,	(28 times in total over 17 years, together with students)	
2017, 2016, 2015,		
2014, 2013, 2012,		
2011, 2010, 2008,		
2007		
2019	Campus Distinguished Promotion Award, University of Illinois at Urbana-	
	Champaign	
2018	CAREER Award, National Science Foundation	
2017	Dean's Award for Excellence in Research, College of Engineering, University	
	of Illinois at Urbana-Champaign	
2016	Best Paper Award, IEEE/ION PLANS Conference	
2009	William E. Jackson Award, for outstanding Ph.D. thesis, Radio Technical Com-	
	mission for Aeronautics (RTCA)	
2008	Early Achievement Award, Institute of Navigation	
reaching, Auvisi	ing and Service Awards	
2023	Excellence in Teaching, AIAA Stanford Chapter	
2022	Excellence in Advising, AIAA Stanford Chapter	
2022	Inspiring Early Academic Career Award, Stanford Faculty Womens Forum	
2022	Excellent Reviewer Journal of Guidance Control and Dunamics	

2022	Excellent Reviewer, Journal of Guidance, Control, and Dynamics
2018, 2017	Engineering Council Award for Excellence in Advising, University of Illinois
	at Urbana-Champaign
2018, 2017, 2015,	Teachers Ranked as Excellent, University of Illinois at Urbana-Champaign
2014	(5 times in total)

2016 Teacher of the Year, AIAA Illinois Chapter

2015 Everitt Award for Teaching Excellence, College of Engineering, University of Illinois at Urbana-Champaign

Invited Talks

2024	Department of Aerospace and Mechanical Engineering, University of Southern California
2023	Indian Institute of Technology Bombay
2023	Indian Institute of Technology Delhi
2023	Robotics Seminar, Massachusetts Institute of Technology
2023	The Robotics Institute, Carnegie Mellon University
2023	Stanford Center for AI safety, Stanford University
2023	The Aerospace Corporation
2023	University College London, UK
2023	Johns Hopkins University Applied Physics Laboratory
2023	NASA Jet Propulsion Laboratory
2022	Stanford Center for Positioning, Navigation and Time, Stanford University
2022	NASA Goddard Space Flight Center
2022	Department of Aerospace Engineering Sciences, University of Colorado Boulder
2022	Department of Aerospace Engineering, University of Michigan
2022	Department of Electrical and Computer Engineering, Cornell University

2021 Department of Aerospace Engineering and Mechanics, University of Minnesota

- 2021 Katherine Johnson Women in Aerospace Conference, Ann Arbor, MI
- 2021 Center for Automotive Research, Stanford University
- 2021 Stanford Center for AI safety, Stanford University
- 2020 Center for Automotive Research, Stanford University
- 2020 Stanford SystemX Symposium, Stanford University
- 2020 Robotics Seminar Series, West Virginia University
- 2020 Ford Autonomous Driving, CA
- 2018 Lawrence Livermore National Laboratory, Livermore, CA
- 2018 Department of Aeronautics and Astronautics, Stanford University
- 2017 Sibley School of Mechanical and Aerospace Engineering, Cornell University
- 2017 School of Aerospace Engineering, Georgia Institute of Technology
- 2017 Wright-Patterson Air Force Research Lab, Dayton, OH
- 2017 Kirtland Air Force Research Lab, Albuquerque, NM
- 2017 Robotics Seminar, Massachusetts Institute of Technology
- 2017 Department of Aerospace Engineering, University of Michigan
- 2017 Department of Mechanical and Aerospace Engineering, Illinois Institute of Technology
- 2016 US Army Communications-Electronics Research, Development and Engineering Center, (CERDEC), Aberdeen MD
- 2016 National Institute of Standards and Technology (NIST), Gaithersburg, MD
- 2016 Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign
- 2016 Field Robotics Center, Carnegie Mellon University
- 2016 InsideGNSS Magazine Webinar
- 2016 Engineering for Everyone, University of Illinois
- 2015 Autonomous Systems and Robotics Technical Area, NASA Ames
- 2015 GPS World Magazine Webinar
- 2015 The GPS Laboratory, Stanford University
- 2014 Illinois State Geological Survey
- 2014 Stanford Center for Position, Navigation and Time Symposium, Stanford University
- 2014 Illinois State Geological Survey
- 2014 Rockwell Collins, Inc. Cedar Rapids, IA
- 2014 Qualcomm Inc, San Diego, CA
- 2014 CyberGIS Center, University of Illinois at Urbana-Champaign
- 2013 Illinois Space Society, University of Illinois at Urbana-Champaign
- 2013 Quantitative Division, Dept. of Psychology, University of Illinois at Urbana-Champaign
- 2013 ION Dayton Section
- 2013 School of Aeronautics and Astronautics, Purdue University
- 2013 Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign
- 2012 Department of Aerospace Engineering and Engineering Mechanics, University of Texas at Austin
- 2012 Sibley School of Mechanical and Aerospace Engineering, Cornell University
- 2012 Department of Aerospace Engineering, University of Illinois at Urbana-Champaign
- 2011 Department of Aerospace Engineering Sciences, University of Colorado Boulder
- 2011 U.S. NAE and Chinese CAE Joint Workshop on GNSS
- 2011 Department of Aeronautics and Astronautics, Stanford University
- 2011 Department of Aeronautics and Astronautics, , Massachusetts Institute of Technology
- 2010 German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt)
- 2009 Qualcomm Inc, Santa Clara, California

2008	Stanford Center for Positioning, Navigation and Time, Stanford University
2007	The MITRE Corporation
2007	German Aerospace Center
2007	University of the German Federal Armed Forces (Universität der Bundeswehr)
2007	University of Calgary, Canada

Publications

Students supervised: **bold**; post-docs supervised: *italic*; Co-first authors: *

Note: the customary practice in the field for order of authors on scholarly publications is that students are named first; faculty are named last.

Journal Papers

[J58]. **Derek Knowles** and Grace Gao, Greedy Detection and Exclusion of Multiple Faults using Euclidean Distance Matrices, Navigation: Journal of the Institute of Navigation. Submitted.

[J57]. Alan Yang, *Tara Mina*, and Grace Gao, Spreading Code Sequence Design via Mixed-Integer Convex Optimization, Navigation: Journal of the Institute of Navigation. Submitted.

[J56]. Ashwin Kanhere and Grace Gao, Fault-Robust GPS Spoofing Mitigation with Expectation-Maximization, Navigation: Journal of the Institute of Navigation. Submitted.

[J55]. *Tara Mina*, Alan Yang, and Grace Gao, Designing Long GPS Memory Codes Using the Cross Entropy Method, Navigation: Journal of the Institute of Navigation. Submitted.

[J54]. Adyasha Mohanty and Grace Gao, Tightly Coupled Graph Neural Network and Kalman Filter for Smartphone Positioning, Navigation: Journal of the Institute of Navigation. Submitted.

[J53]. Marta Cortinovis, Keidai Iiyama, and Grace Gao, Satellite Ephemeris Approximation Methods to Support Lunar Positioning, Navigation, and Timing Services, Navigation: Journal of the Institute of Navigation. December 2024, 71 (4); DOI: 10.33012/navi.664

[J52]. Derek Knowles, Ashwin V. Kanhere, Daniel Neamati, and Grace Gao, gnss_lib_py: Analyzing GNSS Data with Python, SoftwareX. September 2024; DOI 10.1016/j.softx.2024.101811.

[J51]. Adyasha Mohanty and Grace Gao, A Survey of Machine Learning Techniques for Improving Global Navigation Satellite Systems, EURASIP Journal on Advances in Signal Processing. June 2024; DOI 10.1186/s13634-024-01167-7.

[J50]. Tara Mina, Ashwin Kanhere, Akshay Shetty, and Grace Gao, GPS Spoofing-Resilient Filtering Using Self-Contained Sensors and Chimera Signal Enhancement, Navigation: Journal of the Institute of Navigation. June 2024, 71 (2); DOI: 10.33012/navi.636.

[J49]. Alan Yang, *Tara Mina*, and Grace Gao, Spreading Code Optimization for Low-Earth Orbit Satellites via Mixed-Integer Convex Programming, EURASIP Journal on Advances in Signal Processing. May 2024; DOI 10.1186/s13634-024-01160-0.

[J48]. *Shubh Gupta* and Grace Gao, Reliable Urban Vehicle Localization Under Faulty Satellite Navigation Signals, EURASIP Journal on Advances in Signal Processing. April 2024; DOI: 10.1186/s13634-024-01150-2.

[J47]. Keidai Iiyama, *Sriramya Bhamidipati*, and Grace Gao, Precise Positioning and Timekeeping in Lunar Orbit via Terrestrial GPS Time-Differenced Carrier-Phase Measurements, Navigation: Journal of the Institute of Navigation. March 2024, 71(1); DOI: 10.33012/navi.635.

[J46]. Adyasha Mohanty and Grace Gao, Learning GNSS Positioning Corrections for Smartphones using Convolutional Neural Networks, Navigation: Journal of the Institute of Navigation, vol. 70, no. 4, December 2023; DOI: 10.33012/navi.622.

[J45]. Sriramya Bhamidipati, **Tara Mina**, **Alana Sanchez**, and Grace Gao, Satellite Constellation Design for a Lunar Navigation and Communication System, Navigation: Journal of the Institute of Navigation, vol. 70, no. 4, December 2023; DOI: 10.33012/navi.613.

[J44]. Sriramya Bhamidipati, **Tara Mina** and Grace Gao, A Case Study Analysis for Designing a Lunar Navigation Satellite System with Time-Transfer from Earth-GPS, Navigation: Journal of the Institute of Navigation, vol. 70, no. 4, December 2023; DOI: 10.33012/navi.599.

[J43]. Tara Mina, Ashwin V. Kanhere, *Shreyas Kousik* and Grace Gao, Continuous GPS Authentication with Chimera Using Stochastic Reachability Analysis, Navigation: Journal of the Institute of Navigation, vol. 70, no. 4, December 2023; DOI: 10.33012/navi.616.

[J42]. Shubh Gupta, Adyasha Mohanty, and Grace Gao, Urban Localization using Robust Filtering at Multiple Linearization Points, EURASIP Journal on Advances in Signal Processing, October 2023; DOI: 10.1186/s13634-023-01062-7.

[J41]. **Daniel Neamati**, *Sriramya Bhamidipati* and Grace Gao, Mosaic Zonotope Shadow Matching for Risk-Aware Autonomous Localization in Harsh Urban Environments, Journal of Artificial Intelligence, September 2023; DOI: 10.1016/j.artint.2023.104000.

[J40]. Sriramya Bhamidipati and Grace Gao, Networked Timing Risk Analysis Against GPS Spoofing via Stochastic Reachability in PMUs, Navigation: Journal of the Institute of Navigation, vol. 70, no. 3, September 2023, DOI: 10.33012/navi.574.

[J39]. Alexandros Tzikas^{*}, Derek Knowles^{*}, Grace Gao, and Mykel Kochenderfer, Multi-robot Navigation using Partially Observable Markov Decision Processes with Belief-based Rewards, JAIS: Journal of Aerospace Information Systems, June 2023; DOI: 10.2514/1.1011146.

[J38]. Shreyas Kousik, Adam Dai and Grace Gao, Ellipsotopes: Combining Ellipsoids and Zonotopes for Reachability Analysis and Fault Detection, IEEE Transactions on Automatic Control, vol. 68, no. 6, pp. 3440-3452, June 2023; DOI: 10.1109/TAC.2022.3191750.

[J37]. Akshay Shetty, **Timmy Hussain** and Grace Gao, Decentralized Connectivity Maintenance for Multi-robot Systems Under Motion and Sensing Uncertainties, Navigation: Journal of the Institute of Navigation, vol. 70, no. 1, March 2023; DOI: 10.33012/navi.552.

[J36]. Derek Knowles and Grace Gao, Euclidean Distance Matrix-based Rapid Fault Detection and Exclusion, Navigation: Journal of the Institute of Navigation, vol. 70, no. 1, March 2023; DOI: 10.33012/navi.555.

[J35]. Ashwin V. Kanhere^{*}, Shubh Gupta^{*}, Akshay Shetty and Grace Gao, Improving GNSS Positioning using Neural Network-based Corrections, Navigation: Journal of the Institute of Navigation, vol. 69, no. 4, December 2022; DOI: 10.33012/navi.548.

[J34]. Sriramya Bhamidipati, Shreyas Kousik and Grace Gao, Set-Valued Shadow Matching Using Zonotopes for 3-D Map-Aided GNSS Localization, Navigation: Journal of the Institute of Navigation, vol. 69, no. 4, December 2022; DOI: 10.33012/navi.547.

[J33]. Amr Alanwar, Mahmoud Selim, *Shreyas Kousik*, Grace Gao, Marco Pavone and Karl Johansson, Safe Reinforcement Learning Using Black-Box Reachability Analysis, IEEE Robotics and Automation Letter, vol. 7, no. 4, pp. 10665-10672, October 2022; DOI: 10.1109/LRA.2022.3192205.

[J32]. *Sriramya Bhamidipati*, **Tara Mina** and Grace Gao, Time-Transfer from Earth-GPS for Designing a SmallSat-based Lunar Navigation Satellite System, Navigation: Journal of the Institute of Navigation, vol. 69, no. 3, September 2022; DOI: 10.33012/navi.535.

[J31]. David Stier, Asta Wu, Adyasha Mohanty and Grace Gao, A Test Platform for UWB-Based Localization of Dynamic Multi-Agent Systems, IEEE Robotics and Automation Letter, vol. 7, no. 2, pp. 3773-3778, April. 2022; DOI: 10.1109/LRA.2022.3146609.

[J30]. Adyasha Mohanty, Asta Wu, *Sriramya Bhamidipati* and Grace Gao, Precise Relative Positioning via Tight Coupling of GPS Carrier Phase and Multiple UWBs, IEEE Robotics and Automation Letters, vol. 7, no. 2, pp. 5757-5762, April. 2022; DOI: 10.1109/LRA.2022.3145051.

[J29]. **Tara Mina** and Grace Gao, Designing Low-Correlation GPS Spreading Codes with a Natural Evolution Strategy Machine Learning Algorithm, Navigation: Journal of the Institute of Navigation, vol. 69, no. 1, March 2022; DOI: 10.33012/navi.506.

[J28]. Sriramya Bhamidipati and Grace Gao, Robust GPS-Vision Localization via Integrity-Driven Landmark Attention, Navigation: Journal of the Institute of Navigation, vol. 69, no. 1, March 2022; DOI: 10.33012/navi.501.

[J27]. Adyasha Mohanty, Shubh Gupta and Grace Gao, A Particle Filtering Framework for Integrity Risk of GNSS-Camera Sensor Fusion, Navigation: Journal of the Institute of Navigation, vol. 68, no. 4, pp. 709-726, December 2021; DOI: 10.1002/navi.455.

[J26]. Shubh Gupta and Grace Gao, Data-Driven Protection Levels for Camera and 3D Mapbased Safe Urban Localization, Navigation: Journal of the Institute of Navigation, vol. 68, no. 3, pp. 643-660, September 2021; DOI: 10.1002/navi.445.

[J25]. Akshay Shetty and Grace Gao, Predicting State Uncertainty Bounds Using Non-linear Stochastic Reachability Analysis for Urban GNSS-based UAS Navigation, IEEE Intelligent Transportation Systems, vol. 22, no. 9, pp. 5952-5961, September 2021; DOI: 10.1109/TITS.2020.3040517.

[J24]. Shubhendra Chauhan and Grace Gao, Spoofing Resilient State Estimation for the Power Grid Using an Extended Kalman Filter, IEEE Transactions on Smart Grid, vol. 12, no. 4, pp. 3404-3414, July 2021; DOI: 10.1109/TSG.2021.3051920.

[J23]. Shubhendra Chauhan and Grace Gao, Synchrophasor Data Under GPS Spoofing: Attack Detection and Mitigation Using Residuals, IEEE Transactions on Smart Grid, vol. 12, no. 4, pp. 3415-3424, July 2021; DOI: 10.1109/TSG.2021.3051926.

[J22]. Cara Kataria, Steven Franke, Grace Gao and Jennifer Bernhard, Secure Antenna Polarization Modulation Line-of-Sight Analysis and Demonstration, IEEE Transactions on Antennas and Propagation, vol. 69, no. 7, pp. 4100-4108, July 2021; DOI: 10.1109/TAP.2021.3060454.

[J21]. Matthew Peretic and Grace Gao, Design of a Parallelized Direct Position Estimation-Based GNSS Receiver, Navigation: Journal of the Institute of Navigation, vol. 68, no. 1, pp. 21-39, December 2020; DOI: 10.1002/navi.402.

[J20]. Sriramya Bhamidipati and Grace Gao, Integrity Monitoring of Graph-SLAM Using GPS and Fish-eye Camera, Navigation: Journal of the Institute of Navigation, vol. 67, no. 3, pp.

583-600, August 2020; DOI: 10.1002/navi.381.

[J19]. Arthur Chu, Shubhendra Chauhan and Grace Gao, GPS Multi-Receiver Direct Position Estimation for Aerial Applications, IEEE Transactions on Aerospace and Electronic Systems, vol. 56, no. 1, pp. 249-262, Feburary 2020; DOI: 10.1109/TAES.2019.2915393.

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[J17]. Sriramya Bhamidipati and Grace Gao, GPS Multi-Receiver Joint Direct Time Estimation and Spoofer Localization, IEEE Transactions on Aerospace and Electronic Systems, vol. 55, no. 4, pp. 1907-1919, August 2019; DOI: 10.1109/TAES.2018.2879532.

[J16]. Akshay Shetty and Grace Gao, Adaptive Covariance Estimation of LiDAR-based Positioning Errors for UAVs, Navigation: Journal of the Institute of Navigation, vol. 66, no. 2, pp. 463-476, May 2019. DOI: 10.1002/navi.307.

[J15]. Cara Kataria, Grace Gao and Jennifer Bernhard, Design of a Compact Hemispiral GPS Antenna with Direction Estimation Capabilities, IEEE Transactions on Antennas and Propagation, vol. 67, no. 5, pp. 2878-2885, May 2019; DOI: 10.1109/TAP.2019.2899009.

[J14]. Sriramya Bhamidipati and Grace Gao, Locating Multiple GPS Jammers Using Networked UAVs, IEEE Transactions on Internet of Things, vol. 6, no. 2, pp. 1816-1828, April 2019; DOI: 10.1109/JIOT.2019.2896262.

[J13]. **Derek Chen** and Grace Gao, Probabilistic Graphical Fusion of LiDAR, GPS, and 3D Building Maps for Urban UAV Navigation, Navigation: Journal of the Institute of Navigation, vol. 66, no. 1, pp. 151-168, March 2019; DOI: 10.1002/navi.298.

[J12]. Yuting Ng and Grace Gao, GNSS Multi-Receiver Vector Tracking, IEEE Transactions on Aerospace and Electronic Systems, vol. 53, no. 5, pp. 2583-2593, October 2017; DOI: 10.1109/TAES.2017.2705338.

[J11]. *Liang Heng* and Grace Gao, Accuracy of Range-Based Cooperative Positioning: A Lower Bound Analysis, IEEE Transactions on Aerospace and Electronic Systems, vol. 53, no. 5, pp. 2304-2316, October 2017; DOI: 10.1109/TAES.2017.2691921.

[J10]. *Liang Heng*, Athindran Rakesh Kumar and Grace Gao, Location Hash: Private Proximity Detection Using Partial GPS Information, IEEE Transactions on Aerospace and Electronic Systems, vol. 52, no. 6, pp. 2873-2885, December 2016; DOI: 10.1109/TAES.2016.150301.

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[J7]. Liang Heng, Todd Walter, Per Enge and Grace Gao, GNSS Multipath and Jamming Mitigation Using High-Mask-Angle Antennas and Multiple Constellations, IEEE Transactions on Intelligent Transportation Systems, vol. 16, no. 2, pp. 741-750, April 2015; DOI: 10.1109/TITS.2014.2342200.

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[J2]. Grace Gao, Alan Chen, Sherman Lo, David De Lorenzo and Per Enge, Compass-M1 Broadcast Codes in E2, E5b and E6 Frequency Bands, IEEE Journal of Selected Topics in Signal Processing, Special Issue on Advanced Signal Processing for GNSS and Robust Navigation, vol. 3, no. 4, pp. 599-612, August 2009; DOI: 10.1109/JSTSP.2009.2025635.

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Books

[B2]. Jade Morton, Frank van Diggelen, Bradford Parkinson, James Spilker, Jr., Sherman Lo, and Grace Gao, "Position, Navigation, and Timing Technologies in the 21st Century: Integrated Satellite Navigation, Sensor Systems, and Civil Applications, vol. 1 & 2" John Wiley & Sons, 2021.

[B1]. Lance Davis, Per Enge and Grace Gao, "Global Navigation Satellite Systems: Report of a Joint Workshop of the National Academy of Engineering and the Chinese Academy of Engineering," the National Academies Press, ISBN 13: 978-0-309-22275-4, 2012.

Conference Papers

[C131]. Adam Dai, *Shubh Gupta*, and Grace Gao, Neural Elevation Models for Terrain Mapping and Path Planning, RoboNeRF: 1st Workshop on Neural Fields in Robotics at ICRA 2024, May 2024.

[C130]. Marta Cortinovis, *Tara Mina*, and Grace Gao, Assessment of Single Satellite-based Lunar Positioning for the NASA Endurance Mission, IEEE Aerospace Conference, Big Sky, MT, March 2024.

[C129]. Keidai Iiyama^{*}, Guillem Casadesus Vila^{*}, and Grace Gao, Contact Plan Optimization and Distributed State Estimation for Delay Tolerant Satellite Networks, IEEE Aerospace Conference, Big Sky, MT, March 2024.

[C128]. Alan Yang, *Tara Mina*, and Grace Gao, Fast Spreading Code Optimization Under Doppler Effects, ION International Technical Meeting (ION ITM 2024), Long Beach, CA, Jan 2024.

[C127]. Adyasha Mohanty and Grace Gao, Fusing GNN Enhanced GNSS with Neural Radiance Fields for UAV Navigation, ION International Technical Meeting (ION ITM 2024), Long Beach, CA, Jan 2024.

[C126]. Marta Cortinovis, Keidai Iiyama, and Grace Gao, Satellite Ephemeris Approximation Methods to Support Lunar Positioning, Navigation, and Timing Services, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023. Best Presentation of the Session Award.

[C126]. **Daniel Neamati**, **Shubh Gupta**, **Adyasha Mohanty**, and Grace Gao, Neural City Maps for GNSS NLOS Prediction, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023. *Best Presentation of the Session Award*.

[C124]. Adyasha Mohanty, and Grace Gao, Tightly Coupled Graph Neural Network and Kalman Filter for Improving Smartphone GNSS Positioning, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023. *Best Presentation of the Session Award.*

[C123]. Mira Partha, Shubh Gupta, and Grace Gao, Neural City Maps: A Case for 3D Urban Environment Representations Based on Radiance Fields, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023. Best Presentation of the Session Award.

[C122]. Asta Wu, Adyasha Mohanty, Anonto Zaman, and Grace Gao, Bounding GPS-Based Positioning and Navigation Uncertainty for Autonomous Drifting via Reachability, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023. Best Presentation of the Session Award.

[C121]. **Derek Knowles** and Grace Gao, Detection and Exclusion of Multiple Faults using Euclidean Distance Matrices, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023. *Best Presentation of the Session Award*.

[C120]. Ashwin Kanhere and Grace Gao, Fault-Robust GPS Spoofing Mitigation with Expectation-Maximization, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023. Best Presentation of the Session Award.

[C119]. Isabella Torres and Grace Gao, Intent- and Fault-based Trajectory Prediction for Cooperative Localization and Collision Avoidance in Swarms, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023.

[C118]. **Tara Mina**, **Alan Yang**, and Grace Gao, Designing Long GPS Memory Codes Using the Cross Entropy Method, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023.

[C117]. **Derek Knowles**, **Ashwin Kanhere**, and Grace Gao, Localization and Fault Detection Baselines From an Open-Source Python GNSS Library, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023.

[C116]. Adam Dai, Shubh Gupta, and Grace Gao, Neural Radiance Maps for Extraterrestrial Navigation and Path Planning, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023.

[C115]. Alan Yang, Tara Mina, and Grace Gao, Spreading Code Sequence Design is a Convex Optimization Problem with Binary Constraints, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023.

[C114]. Keidai Iiyama^{*}, Guillem Casadeus Vila^{*}, and Grace Gao, LuPNT: Open-Source Simulator for Lunar Positioning, Navigation, and Timing, Proceedings of the Institute of Navigation

GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023.

[C113]. Keidai Iiyama, and Grace Gao, Positioning and Timing of Distributed Lunar Satellites via Terrestrial GPS Differential Carrier Phase Measurements, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2023), Denver, CO, Sep 2023.

[C112]. Alan Yang, Tara Mina, and Grace Gao, Binary sequence set optimization for CDMA applications via mixed-integer quadratic programming, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2023.

[C111]. Akshay Shetty, Adam Dai, Alexandros Tzikas and Grace Gao, Safeguarding Learning-Based Planners Under Motion and Sensing Uncertainties Using Reachability Analysis, IEEE International Conference on Robotics and Automation (ICRA) 2023.

[C110]. Adam Dai, Tara Mina, Ashwin Kanhere, and Grace Gao, Spoofing-Resilient LiDAR-GPS Factor Graph Localization with Chimera Signal Enhancement, Proceedings of the IEEE/ION PLANS conference, Monterey, CA, April 2023.

[C109]. **Keidai Iiyama**, *Sriramya Bhamidipati*, and Grace Gao, Terrestrial GPS Time-Differenced Carrier-Phase Positioning of Lunar Surface Users, IEEE Aerospace Conference 2023.

[C108]. Keidai Iiyama, *Sriramya Bhamidipati*, and Grace Gao, Precise Positioning and Timekeeping in Lunar Orbit via Terrestrial GPS Time-Differenced Carrier-Phase Measurements, Proceedings of the Institute of Navigation ITM conference (ION ITM 2023), Long Beach, CA, Jan 2023.

[C107]. Sriramya Bhamidipati, **Tara Mina**, **Alana Sanchez** and Grace Gao, A Systematic Approach to the Design of Lunar Navigation and Communication System with Time-Transfer from Earth-GPS, Proceedings of the Institute of Navigation GNSS+ conference (ION GNSS+ 2022), Denver, CO, Sep 2022. Best Presentation of the Session Award.

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Teaching

Instructor, AA 275: Navigation for Autonomous Systems	Winter 2024, Fall 2022,
Stanford University	Fall 2021, Fall 2020
Instructor , AA 173: <i>Flight Mechanics and Controls</i> Stanford University	Spring 2024, Spring 2022, Spring 2021, Spring 2020
Instructor , AA 272: <i>Global Positioning Systems</i> Stanford University	Fall 2024, Fall 2023, Winter 2023, Winter 2022, Winter 2021, Winter 2020

Instructor, AE 483: UAV Navigation and Control University of Illinois at Urbana-Champaign

Instructor, AE 598ANS: Advanced Navigation SystemsSpring 2019, Spring 2018University of Illinois at Urbana-ChampaignSpring 2017, Spring 2016, Spring 2015

Instructor, AE/ECE 456: Global Navigation Satellite SystemsUniversity of Illinois at Urbana-ChampaignFall 2016, Fall 2014, Spring & Fall 2013

PhD/Postdoc Advising Current PhD Students

Kaila Coimbra Guillem Casadesus Vila Daniel Neamati Mira Partha Keidai Iiyama Asta Wu Adam Dai Alan Yang (Co-advised with Prof. Stephen Boyd)

Current Postdocs

Shubh Gupta Tara Mina

Graduated PhD Students

Derek Knowles (2024) Adyasha Mohanty (2024, Assistant Professor at Harvey Mudd College) Ashwin Kanhere (2024, MIT Lincoln Laboratory) Shubh Gupta (2024, Co-founder and Chief Vision Officer, SigIQ.ai) Tara Mina (2024, Research Engineer at Georgia Tech) Sriramya Bhamidipati (2021, NASA Jet Propulsion Laboratory) Akshay Shetty (2021, Supernal, Hyundai Motor Group) Shubhendra Chauhan (2020, Latitude AI) Cara Kataria (2020, co-advised with Prof. Jennifer Bernhard, MIT Lincoln Laboratory)

Past Postdocs

Shubh Gupta (2024, Co-founder and Chief Vision Officer, SigIQ.ai)
Tara Mina (2024, Research Engineer, Georgia Tech)
Sriramya Bhamidipati (2022, NASA Jet Propulsion Laboratory)
Akshay Shetty (2022, Supernal, Hyundai Motor Group)
Shreyas Kousik (2021, Assistant Professor, Georgia Institute of Technology)
Heng Liang (2013, co-founder and CTO, Roadstar.ai)

Service

Professional Service

Conference and Workshop Organizing

2024	Co-organizer, Bay Area Robotics Symposium
2024	Organizer and facilitator, Panel on Autonomous Navigation for Ground,
	Seaborne, and Airborne Vehicles, ION GNSS+ Conference
2024	Organizing committee member, Future Leaders in Aerospace Symposium, Stan-
	ford University
2023	Co-organizer, Workshop on Closing the Loop on Localization, IROS 2023 Con-
	ference
2023, 2016, 2015,	Session Chair, ION ITM Conference
2012, 2011	
2022	Session chair, IROS 2022 Conference
2022	Program committee member, National Science Foundation CPS PI Meeting
2022, 2017, 2015,	Session chair, ION GNSS+ Conference
2012, 2011, 2008	
2022	Session chair, ICRA 2022 Conference
2021	Organizer, 3rd NorCal Control Workshop
2021	Program committee member, 1st Workshop on AI for Space, CVPR 2021
2018,2016,2013	Track chair, ION GNSS+ Conference
2018, 2016	Session chair, IEEE/ION PLANS Conference

Journal Editorial Activities

2016-2018 Associate Editor, IEEE Transactions on Aerospace and Electronic Systems

Memberships

2015-present	IEEE Senior member		
2006-present	Institute of Navigation	(ION)	member

Affiliations

2020 - present	Reviewer, NASA Space Technology Graduate Research Opportunity Program
2022 - present,	Reviewer, NASA Postdoctoral Program
2016, 2015	
2019, 2017,	Review panelist, National Science Foundation
2016, 2015	
2017	Founding member, National UAS Standardized Testing and Rating Board
2015, 2014	Treasurer, Satellite Division, ION
2013, 2012	Elected Officer (Air Representative), ION
2011, 2010	Judging Panel, Fulbright Scholar Program, Stanford University
2010	Judging Panel, GNSS USA Challenge

University and Departmental Service

University Service

at Stanford	University
2022-present	Co-director, Stanford AI Safety Center
2020-2024	Co-lead, Stanford SystemX Alliance Robotics Area

at University of Illinois at Urbana-Champaign

2019	Aerospace Engineering department head search committee
2019	Faculty search committee, Department of Computer Science
2019, 2018,	Coordinated Sciences Lab (CSL) advisory committee
2016, 2015	
2018, 2017	CSL staff award committee
2017	Information Trust Institute (ITI) search committee for CREDC Managing Di-
2017	rector Committee for implementing a new degree program in
	Innovation, Leadership and Engineering Entrepreneurship (ILEE)
2016	CSL search committee for a Robotics Institute technical engineer

Department Service

at Stanford University

2020-present	Founding co-chair (2020-2022) and member of diversity, equity and inclusion
2021 procent	committee
2021-present	Craduate admission committee
2019-2022	Selection committee member Acro Astro Community Records Experience
2021	(AACREs)
2020	New direct PhD program committee
at University o	f Illinois at Urbana-Champaign
2018-2019	Aerospace Engineering (AE) faculty search committee
2018-2019	AE graduate program committee
2016-2019	AE department awards committee
2017, 2016	Chair of AE department undergrad curriculum committee
	(Passed a major undergrad curriculum change)
2016, 2015	AE department advisory committee
2016, 2015	Chair of AE faculty meeting
2016, 2015	AE department undergrad curriculum committee
2015, 2014	AE graduate admission committee
2015. 2014	Secretary of AE department faculty meeting
2015, 2014	Chair of Engineering Open House
2013	AE faculty search committee
Student Service	
at Stanford Un	iversity
2021 - present	Faculty mentor, Enhancing Diversity in Graduate Education (EDGE) Fellows
2019 - present	Faculty advisor. Women in Aeronautics and Astronautics (WIAA)
2010 magaint	Summer Undergreduete Descende Fellenskin (CUDE)

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2019 - present	Faculty advisor, Women in Aeronautics and Astronautics (WIAA)
2019 - present	Summer Undergraduate Research Fellowship (SURF)
2019 - present	Aero/Astro undergrad advisor
2022, 2021	Faculty panelist, Summer First Program
2022, 2021	Faculty panelist, Summer Undergraduate Research Fellowship (SURF)
2021	Faculty advisor for Aero Astro Community Research Experience (AACREs)
2021	Faculty advisor for Research Experience for Undergraduate (REU) students
2021	Faculty advisor for Inclusion, Diversity, and Equity in a Learning Environment
	(IDEAL)

at University of Illinois at Urbana-Champaign

2018, 2017, 2016,	Faculty advisor of UIUC team for NASA Micro-g NExT competition
2015	(The student teams were selected all four years.)
2016, 2015	Faculty advisor for UIUC Engineering Open House projects
2015	Faculty advisor for Boeing IT Case Competition
	(The student team won the 2nd place, and was invited to Boeing headquarters
	for the award ceremony.)

Outreach

2024	Organizing committee member, Future Leaders in Aerospace Symposium, Stan-
	ford University
2023	Faculty panelist, Future Leaders in Aerospace Workshop at Massachusetts In-
	stitute of Technology
2020	Faculty panelist, Mechanical Engineering Rising Star Workshop at Stanford
	University
2019, 2017	Workshop for Girls Learning Electrical Engineering (GLEE) Summer Camp
2019	Workshop for Catalyzing Inclusive STEM Experiences All Year Round (CIS-
	TEME365)
2013-2019	Showcase research projects in UIUC Engineering Open House
2018	Lecture and demo for Girls Adventures in Mathematics, Engineering, and Sci-
	ence (GAMES) Summer Camp
2017	Lecture and demo for Girls Learning Air and Space Science (GLASS)
2017, 2016, 2015	Panelist at Women in PNT Event at ION GNSS+ Conferences
2017 - 2013	Outreach through DoE CREDC Center
2016	Lecture for "Saturday Engineering for Everyone"
2015	Lectures and demo at Hobbico E-fest
2008, 2007	Workshop at Sally Ride Science Festival