

Curriculum Vitae

Akshay Shetty

+1 217-819-7733 (mobile)
496 Lomita Mall, Stanford, CA 94305

ashetty2 AT stanford.edu
[\[LinkedIn\]](#)

Education

Ph.D. Aerospace Engineering [thesis] University of Illinois at Urbana-Champaign	Champaign, Illinois 2017–2021
M.S. Aerospace Engineering [thesis] University of Illinois at Urbana-Champaign	Champaign, Illinois 2014–2017
B.Tech. Aerospace Engineering Indian Institute of Technology Bombay	Mumbai, India 2010–2014

Research and Work Experience

Postdoctoral Researcher NAV Lab [webpage] , Stanford University Advisor: Prof. Grace Gao	Stanford, California 2021–present
<ul style="list-style-type: none">- Worked on and supervised multiple projects related to safe navigation and robust state estimation for autonomous systems	

Research Intern NASA Ames Research Center	Mountain View, California Summer 2016 & Summer 2017
<ul style="list-style-type: none">- Mentored summer interns and developed software for autonomous vision-based UAV navigation [video][code]	

Visiting Research Scholar Cranfield University, Ministry of Defence	Shrivenham, UK Summer 2013
<ul style="list-style-type: none">- Improved vehicle dynamics in Virtual Battle Space by interfacing with IPG Carmaker software	

Research Intern Indian Space Research Organization (ISRO)	Bangalore, India Summer 2012
<ul style="list-style-type: none">- Evaluated receiver localization algorithms for the Indian Regional Navigation Satellite System	

Journal Papers

1. **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*, Accepted. [\[pdf\]](#)
2. Ashwin V. Kanhere*, Shubh Gupta*, **Akshay Shetty**, and Grace Gao, “Improving GNSS Positioning using Iterative Deep Corrections,” *NAVIGATION: Journal of the Institute of Navigation*, Accepted. [\[pdf\]](#)
3. **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*, DOI: 10.1109/TITS.2020.3040517, November 2020. [\[pdf\]](#)
4. **Akshay Shetty** and Grace Gao, “Adaptive Covariance Estimation of LiDAR-based Positioning Errors for UAVs,” *NAVIGATION: Journal of the Institute of Navigation*, DOI: 10.1002/navi.307, May 2019. [\[pdf\]](#)

Magazine Articles

Akshay Shetty and Grace Gao, “GPS-LiDAR Fusion with 3D City Models,” *GPS World Magazine*, Cover Story, September 2017. [\[pdf\]](#)

Conference Papers

1. **Akshay Shetty**, Adam Dai, Alexandros Tzikas and Grace Gao, “Safeguarding Learning-Based Planners Under Motion and Sensing Uncertainties Using Reachability Analysis,” *Conference on Robot Learning (CoRL) 2022*, Submitted. [\[pdf\]](#)
2. Shubh Gupta*, Ashwin V. Kanhere*, **Akshay Shetty**, and Grace Gao, “Designing Deep Neural Networks for Sequential GNSS Positioning,” *35th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2022)*, Accepted.
3. Tara Mina, Ashwin V. Kanhere, **Akshay Shetty**, and Grace Gao, “GPS Spoofing-Resilient Filtering with Chimera and Self-Contained Odometry,” *35th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2022)*, Accepted.
4. Ashwin V. Kanhere, Tara Mina, **Akshay Shetty**, and Grace Gao, “Factor Graph-based Spoofing Mitigation using the Chimera Signal Enhancement,” *35th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2022)*, Accepted.
5. **Akshay Shetty**, Timmy Hussain and Grace Gao, “Decentralized Connectivity Maintenance for Multi-robot Systems Under Motion and Sensing Uncertainties,” *Proceedings of the 34th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2021)*, St. Louis MO, Sep. 2021. **Best Presentation of the Session Award.** [\[pdf\]](#)[\[slides\]](#)[\[video\]](#)
6. Ashwin V. Kanhere*, Shubh Gupta*, **Akshay Shetty**, and Grace Gao, “Improving GNSS Positioning using Iterative Deep Corrections,” *Proceedings of the 34th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2021)*, St. Louis MO, Sep. 2021. [\[pdf\]](#)[\[slides\]](#)[\[video\]](#)[\[code\]](#)
7. **Akshay Shetty** and Grace Gao, “Trajectory Planning Under Stochastic and Bounded Sensing Uncertainties Using Stochastic Reachability,” *Proceedings of the 33rd International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2020)*, St. Louis MO, Sep. 2020. [\[pdf\]](#)[\[slides\]](#)[\[video\]](#)
8. **Akshay Shetty** and Grace Gao, “Predicting State Uncertainty for GNSS-based UAV Path Planning Using Stochastic Reachability,” *Proceedings of the 32nd International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2019)*, Miami FL, Sep. 2019. [\[pdf\]](#)[\[slides\]](#)
9. **Akshay Shetty** and Grace Gao, “UAV Pose Estimation using Cross-view Geolocalization with Satellite Imagery,” *International Conference on Robotics and Automation (ICRA)*, Montreal, Canada, May 2019. [\[pdf\]](#)[\[video\]](#)[\[data\]](#)
10. **Akshay Shetty** and Grace Gao, “Covariance Estimation for GPS-LiDAR Sensor Fusion for UAVs,” *Proceedings of the 30th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2017)*, Portland OR, Sep. 2017. [\[pdf\]](#)
11. **Akshay Shetty** and Grace Gao, “Vision-Aided Measurement Level Integration of Multiple GPS Receivers for UAVs,” *Proceedings of the 28th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2015)*, Tampa FL, Sep. 2015. [\[pdf\]](#)
12. **Akshay Shetty** and Grace Gao, “Measurement Level Integration of Multiple Low-Cost GPS Receivers for UAVs,” *Proceedings of the 2015 International Technical Meeting of the Institute of Navigation (ION ITM 2015)*, Dana Point, CA, Jan. 2015. [\[pdf\]](#)

Skills

Programming	Python, C++, MATLAB, C#
Learning and Robotics	PyTorch, ROS, AirSim, Unity, Gazebo, Pixhawk

Academic Community Service

Session Chair, *ION ITM Conference* [[website](#)] **Jan 2022**

Session: Navigation of Unmanned Aerial Vehicles and other Autonomous Systems

Student Moderator, *3rd NorCal Controls Workshop* [[website](#)] **Jan 2021**

Virtual

Paper Reviewer

IEEE Transactions on Robotics (T-RO), *International Conference on Robotics and Automation (ICRA)*,
NAVIGATION: Journal of The Institute of Navigation, *IEEE Transactions on Aerospace and Electronic
Systems (T-AES)*, *AIAA Journal of Guidance, Control, and Dynamics (JGCD)*.

Honors and Awards

2021 Best Presentation of the Session Award [[video](#)], *ION GNSS+ Conference 2021*

2019 Video of the Month [[video](#)], *Coordinated Science Lab, University of Illinois*

2016 Google Special Mention, *HackIllinois*

2015 Most Creative Team, *Smart Bar Hackathon*

2014 Institute Silver Medal, *Indian Institute of Technology Bombay*