

Hangxin Liu

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EDUCATION

University of California, Los Angeles

Ph.D. in Computer Science, Computer Vision concentration
M.S. in Mechanical Engineering, Robotics concentration
 Overall GPA 3.82/4.00

Los Angeles, CA

04/2018 – Present

09/2016 – 03/2018

Virginia Polytechnic Institute & State University (Virginia Tech)

B. S. in Mechanical Engineering, Robotics concentration
B. S. in Computer Science, Scientific Computing concentration
 Minor: **Mathematics**
 Overall GPA 3.78/4.00, Magna Cum Laude, Honors Scholar

Blacksburg, VA

08/2012 – 05/2016

01/2014 – 05/2016

Shanghai Jiao Tong University (University of Michigan-SJTU Joint Institute)

Exchange Student (Mechanical Engineering)

Shanghai, China

5/2014 – 08/2014

APPOINTMENTS

Center for Vision, Cognition, Learning, and Autonomy

09/2016 – Present

Graduate Student Researcher, Advisor: Dr. Song-Chun Zhu

- ONR N00014-19-1-2153: Scene Understanding for Robot Autonomy
- DARPA XAI N66001-17-2-4029: Learning and Communicating Explainable Representations for Analytics and Autonomy
- ONR MURI N00014-16-1-2007: Understanding Scenes and Events through Joint Parsing, Cognitive Reasoning and Lifelong Learning
- DARPA SIMPLEX N66001-15-C-4035: Learning Homogeneous Knowledge Representation from Heterogeneous Data for Quantitative and Qualitative Reasoning in Autonomy

Computational Multi-physics Systems (CMS) Laboratory

01/2015 – 09/2016

Undergraduate/Graduate Research Assistant, Advisor: Dr. Tomonari Furukawa

- Developed an infrastructural traffic monitoring design using Arduino, laser ranger finders, IR image sensor with Raspberry Pi.
- Led the software sub-team of Self-Driving Vehicle Team (SDVT: <http://www.me.vt.edu/sdvt/>) and implemented way-point controls on a drive-by-wire gofcart in Robot Operating System (ROS) using Sick LiDAR, IMU, GPS, and RGB-D sensors.
- Assisted a Post-doc researcher in developing probabilistic approach to NLOS visual/ acoustical target estimation based on recursive Bayesian estimation framework, and conducting test on human/ mobile sensor platform for human-robot-interaction.
- Worked on motion tracking and feature detection using non-stationary camera that enabled UAV to locate, track and land on a moving ground vehicle for the Mohamed Bin Zayed International Robotics Challenge (MBZIRC 2017).
- Mentoring a senior design project, Self-Driving Vehicle Team, consisting of ten senior students.

PUBLICATIONS

Journal Paper

- [J1] Y. Tian, **H. Liu**, and T. Furukawa, “Reliable Infrastructural Urban Traffic Monitoring Via Lidar and Camera Fusion,” SAE International Journal of Passenger Cars-Electronic and Electrical Systems, 10(2017-01-0083), pp.173-180, 2017, DOI: 10.4271/2017-01-0083.

Conference Paper (* indicates joint first authors)

- [C11] X. Xie, **H. Liu**, Z. Zhang, Y. Qiu, F. Gao, S. Qi, Y. Zhu, S.-C. Zhu, “VRGym: A Virtual Testbed for Physical and Interactive AI,” 2nd ACM Turing Celebration Conference - China (ACM TURC), 2019

- [C10] **H. Liu***, Z. Zhang*, Xu Xie, Y. Zhu, S.-C. Zhu, “High-Fidelity Grasping in Virtual Reality using a Glove-based System,” IEEE International Conference on Robotics and Automation (ICRA), 2019
- [C9] **H. Liu***, Z. Zhang*, Y. Zhu, S.-C. Zhu, “Self-Supervised Incremental Learning for Sound Source Localization in Complex Indoor Environment,” IEEE International Conference on Robotics and Automation (ICRA), 2019
- [C8] **H. Liu**, C. Zhang, Y. Zhu, C. Jiang, S.-C. Zhu, “Mirroring without Overimitation: Learning Functionally Equivalent Manipulation Actions,” 33rd AAAI Conference on Artificial Intelligence (AAAI), 2019
- [C7] **H. Liu***, Y. Zhang*, W. Si, X. Xie, Y. Zhu, S.-C. Zhu, “Interactive Robot Knowledge Patching using Augmented Reality,” IEEE International Conference on Robotics and Automation (ICRA), 2018
- [C6] X. Xie*, **H. Liu***, M. Edmonds, F. Gao, S. Qi, Y. Zhu, B. Rothrock, S.-C. Zhu, “Unsupervised Learning of Hierarchical Models for Hand-Object Interactions,” IEEE International Conference on Robotics and Automation (ICRA), 2018
- [C5] M. Edmonds*, F.Gao*, X. Xie, **H. Liu**, S. Qi, Y. Zhu, B. Rothrock, S.-C. Zhu, “Feeling the Force: Integrating Force and Pose for Fluent Discovery through Imitation Learning to Open Medicine Bottles ,” IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2017
- [C4] **H. Liu***, X. Xie*, M. Millar*, M. Edmonds, F.Gao, Y. Zhu, V. Santos, B. Rothrock, S.-C. Zhu, “A Glove-based System for Studying Hand-Object Manipulation via Joint Pose and Force Sensing,” IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2017
- [C3] K. Takami, **H. Liu**, T. Furukawa, M. Kumon, G. Dissanayake, "Non-Field-of-View Sound Source Localization Using Diffraction and Reflection Signal," IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2016
- [C2] **H. Liu**, Y. Tian, T. Furukawa,. “Design of Highly Reliable Infrastructural Traffic Monitoring Using Laser and Vision Sensors,” ASME IDETC/CIE, 2016
- [C1] K. Takami, **H. Liu**, T. Furukawa, M. Kumon, G. Dissanayake, “Recursive Bayesian Estimation of NFOV Target Using Diffraction and Reflection Signals,” ISIF International Conference on Information Fusion, 2016

HONORS & AWARDS

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| • ACM TURC Conference Best Paper Award | 2019 |
| • ICRA 2019 Conference Travel Award | 2019 |
| • ICRA 2018 Conference Travel Award | 2018 |
| • Pratt Engineering Scholarship (\$5000 each academic year) from Collage of Engineering | 2013 – 2016 |
| • Dean’s Scholarship (\$3000) from Collage of Engineering | Spring 2013 |
| • Dean’s List (Two semesters). | Spring 2015– Fall 2015 |
| • Dean’s List with Distinction (Six semesters). | Fall 2012 – Fall 2014, Spring 2016 |
| • University Honor Student at Virginia Tech. | Summer 2014 – Spring 2016 |

LANGUAGES & SKILLS

Language: Chinese Mandarin and Cantonese: Native
English: Full professional proficiency

Skills: Computer Languages: Java, C/C++, Python Software: Robot Operating System (ROS), MATLAB, Eclipse
Operating Systems: Windows, Linux CAD: AutoDesk Inventor, Solidworks

MEMBERSHIPS & AFFILIATION

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| • Student Member of IEEE and RAS. | 06/2017 |
| • Member of Phi Beta Kappa Honor Society. | 04/2016 |
| • Student Member of ASME. | 01/2016 |
| • Member of Tau Beta Pi National Engineering Honor Society. | 04/2014 |