Hangxin Liu

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EDUCATION

University of California, Los Angeles   **Los Angeles, CA**
   Ph.D. in Computer Science, Computer Vision concentration   04/2018 – Present
   M.S. in Mechanical Engineering, Robotics concentration   09/2016 – 03/2018
   Overall GPA 3.82/4.00

Virginia Polytechnic Institute & State University (Virginia Tech)   **Blacksburg, VA**
   B. S. in Mechanical Engineering, Robotics concentration   08/2012 – 05/2016
   B. S. in Computer Science, Scientific Computing concentration   01/2014 – 05/2016
   Minor: **Mathematics**
   Overall GPA 3.78/4.00, Magna Cum Laude, Honors Scholar

Shanghai Jiao Tong University (University of Michigan-SJTU Joint Institute**)**   **Shanghai, China**
Exchange Student (Mechanical Engineering)   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 senor 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 goftcart 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   (* indicates joint first authors)

[J3]   Y. Zhu, T. Gao, L. Fan, S. Huang, M. Edmonds, **H. Liu**, F. Gao, C. Zhang, S. Qi, Y.N. Wu, J.B. Tenenbaum, S.-C. Zhu, "Dark, Beyond Deep: A Paradigm Shift to Cognitive AI with Human-like Commonsense," Engineering, 2020, DOI: 10.1016/j.eng.2020.01.011

[J2]   M. Edmonds*, F. Gao*, **H. Liu***, X. Xie*, S. Qi, B. Rothrock, Y. Zhu, Y.N. Wu, H. Lu, S.-C. Zhu, "A Tale of Two Explanations: Enhancing Human Trust by Explaining Robot Behavior," Science Robotics, 2019, DOI: 10.1126/scirobotics.aay4663

[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)

[C13]   Z. Zhang, **H. Liu**, Z. Jiao, Y. Zhu, S.-C. Zhu, "Congestion-aware Evacuation Routing using Augmented Reality," IEEE International Conference on Robotics and Automation (ICRA), 2020

[C12]   T. Yuan, **H. Liu**, L. Fan, Z. Zheng, T. Gao, Y. Zhu, S.-C. Zhu, "Joint Inference of States, Robot Knowledge, and Human (False-)Beliefs," IEEE International Conference on Robotics and Automation (ICRA), 2020

[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

- 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

PROFESSIONAL SERVICE

Conference Reviewer: ICRA (2020, 2019), IROS (2019)

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

- 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