Ruikun Luo

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EDUCATION

University of Michigan, Ann Arbor, MI
Ph.D., Robotics, *Dec* 2020 (Expected).
Advisor: Jessie X. Yang

Carnegie Mellon University, Pittsburgh, PA
M.S., Mechanical Engineering, *May* 2014.
Advisor: Katia Sycara

Tsinghua University, Beijing, China
B.E., Mechanical Engineering and Automation, *July* 2012.
Innovative Talent Cultivating Program, *July* 2012.
Advisor: Jing Xu

RESEARCH EXPERIENCE

Research Assistant May 2018 - Present
Faculty advisor: Jessie X. Yang
Interaction and Collaboration Research Lab, University of Michigan

- Project 1: Realtime Workload Estimation Via Physiological Measurements
- Project 2: Workload Adaptive Haptic Shared Control Scheme for Semi-Autonomous Driving
- Project 3: Robot Docent to Arouse Visitors' Interest in Art Museum
- Project 4: Explainable AI: an Option-Centric Rationale Approach
- Project 5: Effects of Delay on Teleoperation of Unmanned Ground Vehicles
- Project 6: Trust Dynamics in Sequential Decision Making

Research Assistant June 2016 - May 2018
Faculty advisor: Dmitry Berenson
Autonomous Robotic Manipulation Lab, University of Michigan

- Project : Robot Motion Planning with Actuation Uncertainty in Contact-rich Environment

Research Assistant Sep. 2014 - June 2016
Faculty advisor: Dmitry Berenson
Autonomous Robotic Collaboration Laboratory, Worcester Polytechnic Institute

- Project 1: Unsupervised Online Human Reaching Motion Recognition and Early Prediction
- Project 2: Human Robot Collaboration in Shared Workspace

Research Assistant Aug. 2012 - May 2014
Faculty advisor: Katia Sycara
Advanced Agent-Robotics Technology Lab, Carnegie Mellon University

- Project 1: Supervisory Control for Cost-Effective Redistribution of Robotic Swarms
- Project 2: Human Activity Recognition for Sequential Tasks from RGBD data

Research Assistant Aug. 2011 - June 2012

Faculty advisor: Jing Xu and Li Liu
Institute of Mechatronic Engineering, Tsinghua University

· Undergraduate Thesis: Active Dancing Partner Robot Based on Kinect
· Project : Humanoid Soccer Robot

MENTORING EXPERIENCE

University of Michigan May 2018 - Present

· Mentored 4 master students and 3 undergraduates. Two students continued Ph.D. at University of Michigan, Ann Arbor and University of Texas at Austin.

Worcester Polytechnic Institute Sep. 2014 - June 2016

· Mentored 1 master student.

PROFESSIONAL SERVICES

Reviewer

· IEEE Robotics and Automation Letters
· International Conference on Robotics and Automation
· International Conference on Intelligent Robots and Systems
· IEEE-RAS International Conference on Humanoid Robots
· American Control Conference

Service

· Newsletter Editor for Human AI Robot Teaming Technical Group in HFES.

PUBLICATIONS

Journal Publication

[1] **Luo, R.**, Hayne, R., & Berenson, D. (2018). Unsupervised early prediction of human reaching for human–robot collaboration in shared workspaces. *Autonomous Robots*, 42(3), 631-648.

[2] Xu, J., Liu, S., Wan, A., Gao, B., Yi, Q., Zhao, D., **Luo, R.** & Chen, K. (2012). An absolute phase technique for 3D profile measurement using four-step structured light pattern. *Optics and Lasers in Engineering*, 50(9), 1274-1280.

Manuscripts in Review (* Equal contribution)

[1] **Luo, R.***, Weng, Y.*, Wang, Y., Jayakumar, P., Brudnak, M. J., Paul, V., Desaraju, V. R., Stein, J. L., Ersal, T., & Yang, X. J. A Workload Adaptive Haptic Shared Control Scheme for Semi-Autonomous Driving. *Transactions On Human-Machine Systems.*

[2] **Luo, R.**, Du, N., Huang, K. Y., & Yang, X. J. Enhancing autonomy transparency: an option-centric rationale approach. *Journal of Cognitive Engineering and Decision Making.*

Conference Proceedings (* Equal contribution)

[1] **Luo, R.**, Chu, J., X. J. (2020). Trust Dynamics in Human-AV (Autnomated Vehicle) Interaction. In *Extended Abstract of 2020 CHI Conference on Human Factors in Computing Systems*.

[2] Weng, Y., **Luo, R.**, Jayakumar, P., Brudnak, M. J., Paul, V., Desaraju, V. R., Stein, J. L., Yang, X. J., & Ersal, T. Design and Human-in-the-Loop Evaluation of a Workload-Adaptive Haptic Shared Control Framework for Semi-Autonomous Driving. *In Proceedings of the 2020 American Control Conference*. IEEE.

[3] **Luo, R.***, Wang, Y.*, Weng, Y., Paul, V., Brudnak, M. J., Jayakumar, P., Reed, M., Stein, J. L., Ersal, T., & Yang, X. J. (2019). Toward Real-time Assessment of Workload: A Bayesian Inference Approach. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*.

[4] **Luo, R.**, Du, N., Huang, K. Y., & Yang, X. J. (2019). Enhancing Transparency in Human-autonomy Teaming via the Option-centric Rationale Display. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*.

[5] Hayne, R., **Luo, R.**, & Berenson, D. (2016, May). Considering avoidance and consistency in motion planning for human-robot manipulation in a shared workspace. In *2016 IEEE International Conference on Robotics and Automation (ICRA)* (pp. 3948-3954). IEEE.

[6] **Luo, R.**, & Berenson, D. (2015, September). A framework for unsupervised online human reaching motion recognition and early prediction. In 2015 *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (pp. 2426-2433). IEEE.

[7] **Luo, R.**, Chakraborty, N., & Sycara, K. (2014, October). Supervisory control for cost-effective redistribution of robotic swarms. In 2014 *IEEE International Conference on Systems, Man, and Cybernetics (SMC)* (pp. 596-601). IEEE. (**Best student paper finalist**)

Workshop and Poster Presentations (* Equal contribution)

[1] **Luo, R.**, Du, N., Huang, K. Y., & Yang, X. J. (2019). Enhancing autonomy transparency: an option-centric rationale approach. In *2019 Michigan AI Symposium*.

[2] **Luo, R.**, Benge, S., Vasher, N., VanderVliet, G., Turner, J., Ghaffari, M. & Yang, X. J. (2019). Toward an Interactive Robot Docent: Estimating Museum Visitors' Comfort Level with Art. In *Robotics: Science and Systems Workshop 2019*.

[3] **Luo, R.***, Weng, Y.*, Wang, Y., Jayakumar, P., Brudnak, M. J., Paul, V., Desaraju, V. R., Stein, J. L., Ersal, T., & Yang, X. J. (2019). Mutually-Adaptive Shared Control between Human Operators and Autonomy in Ground Vehicles. In *2019 Automotive Research Center Collaborative Research Seminar*

[4] **Luo, R.**, & Berenson, D. (2017). Learning Controller Success Rate for an SE(2) Robot in Contact-Rich Environments. In *Robotics: Science and Systems Workshop 2017*.

[5] **Luo, R.**, Hayne, R., & Berenson, D. (2016). Early prediction of human reaching motion for long-term human-robot collaboration. In *AI for Long-term Autonomy Workshop at ICRA 2016*.

[6] **Luo, R.**, & Berenson, D. (2015). A Framework for Unsupervised Online Human Reaching Motion Recognition and Early Prediction. In *2015 New England Manipulation Symposium*.

MEDIA COVERAGE

- Detroit's Premier Business Journal, "U-M Museum of Art in Ann Arbor Developing Autonomous Docent Robot", https://tinyurl.com/u6cr99h 2019.11
- Michigan Radio Stateside, "Robot in the art museum", http://www.tinyurl.com/y5hj4ns5 2019.10
- University of Michigan Arts & Culture News, "U-M Museum of Art Brings Robots to the Art World", https://tinyurl.com/y37n6l9x 2019.10

AWARDS AND HONORS

- HFES Student Presenter Award 2019
- IROS NSF Travel Award 2015
- SMC Best Student Paper Finalist 2014
- SMC Student Travel Award 2014
- WPI RBE Fellowship 2014-2015
- 2nd/3rd Place RoboCup China Open Humanoid League 2009-2011
- Championship in the Penalty Contest of RoboCup China Open Humanoid League 2011
- 2nd Class Scholarship for Scientific and Academic Work, Tsinghua University 2011
- 3nd Class Scholarship for Scientific and Academic Work, Tsinghua University 2010
- 3nd Class Scholarship for Scientific and Academic Work, Tsinghua University 2010
- 1st Prize in 26th National College Student Physics Competition 2009
- 1st Prize in Chinese Physics Olympiad (Top1/6000 in theory part, Top3/6000 in total) 2007