

Yiming Luo, Ph.D. Candidate

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Employment History

- Sep/2019 – Present..
 - 📌 **Research Assistant** X-CHI Lab (Leader: Prof. Hai-Ning Liang), Xi'an Jiao-tong Liverpool University, Suzhou, China.
 - 📌 **Teaching Assistant** Department of Computer Science, Xi'an Jiao-tong Liverpool University, Suzhou, China.
- Jul/2017 – Sep/2017
 - 📌 **Intern** Department of Engine, SAIC Motor Corporation Limited, Shanghai, China.

Education

- Sep/2019 – Present..
 - 📌 **Ph.D., University of Liverpool** in Computer Science & Software Engineering.
Thesis title: *Teleoperation of Mobile Unmanned Robots in Virtual Reality*
Supervisor: Hai-Ning Liang, Professor, Xi'an Jiaotong-Liverpool University, Suzhou, China
Second Supervisor: Shan Luo, Associate Professor, King's College London, London, UK
- Sep/2017 – Sep/2018
 - 📌 **M.Sc., University of Southampton** in Systems, Control & Signal Processing.
Thesis title: *Sensors for measurement of object gripping.*
- Sep/2015 – Jun/2017
 - 📌 **B.Eng., University of Liverpool** in Electrical & Electronics Engineering.
Thesis title: *Control of a wind turbine for supporting power grid frequency*
- Sep/2013 – Jun/2015
 - 📌 **Y1 - Y2, Xi'an Jiaotong Liverpool University** in Electrical & Electronics Engineering.

Project Work

- Sep/2022 – Present
 - 📌 **AirNeck: a prototype for wind haptic feedback around human neck**
Contributions: Team leader, project designer, data analyst, and paper writer.
Descriptions: Led a team of undergraduates to realize real-time wind haptic feedback on the human neck to simulate natural wind resistance during UGV teleoperation.
Outcomes: "AirNeck: A portable and precise wind haptic prototype to enhance the user's fluid-like perception in off-screen situation" Preparing.

Project Work (continued)

- Mar/2022 – Sep/2022 **Dynamic edges enhancement: A telepresence method based on two binocular depth cameras**
Contributions: Team leader, project designer, scenario builder, data analyst, and paper writer.
Descriptions: Led a team of postgraduates to enable dynamic edge enhancement of binocular images in UGV telepresence using depth information from two depth cameras.
Outcomes: "Edge Enhancement for Improved Teleoperation of Unmanned Ground Vehicles Using Virtual Reality." Preparing.
- Sep/2021 – Mar/2022 **World-in-Miniature (WiM) technology in UGV teleoperation**
Contributions: Team leader, project designer, scenario builder, experiment executor, data analyst, and paper writer.
Descriptions: Led a team of Ph.D. to investigate a remote manipulation method based on the visualization of the miniature virtual world and the grasping interaction of the miniature virtual surrogate of UGV.
Outcomes: "Teleoperation of a fast omnidirectional unmanned ground vehicle in the cyber-physical world via a vr interface." **Best Paper Award** in VRCAI 2023.
- Mar/2021 – Sep/2021 **Complementary colors edge enhancement: an edge enhancement-based teleoperation method**
Contributions: Team leader, project designer, scenario builder, data analyst, and paper writer.
Descriptions: Led a team of postgraduates to investigate an edge enhancement for telepresence based on the theory of highlighting related to complementary colors.
Outcomes: "Augmenting Performance of VR-mediated Teleoperation of Unmanned-Ground Vehicle Using Edge Detection." Under review by *Frontiers in VR Journal*.
- Mar/2020 – Sep/2020 **Stereoscopic film: a binocular camera-based telepresence method**
Contributions: Team leader, project designer, scenario builder, experiment executor, data analyst, and paper writer.
Descriptions: Led a team of undergraduates to realize real-time image transmission using a binocular camera and provide a perspective similar to a stereoscopic movie in a VR environment for UGV telepresence.
Outcomes: "Monoscopic vs. stereoscopic views and display types in the teleoperation of unmanned ground vehicles for object avoidance." Accepted by one of the TOP conferences (IEEE international conference on robot & human interactive communication (ro-man)).
- Sep/2019 – Mar/2020 **Haptic on HMD: A distance perception method**
Contributions: Project designer, scenario builder, experiment executor, data analyst, and paper writer.
Descriptions: Completed all software and hardware programming, constructions, and experimental site settings individually. Realize real-time distance perception using in-HMD vibro-tactile feedback during UGV teleoperation.
Outcomes: "In-device feedback in immersive head-mounted displays for distance perception during teleoperation of unmanned ground vehicles." Accepted by one of the TOP journals (IEEE Transactions on Haptics).
- Mar/2018 – Sep/2018 **Sensors for measurement of object gripping**
Contributions: Project designer, scenario builder, and experiment executor.
Descriptions: Investigated the data visualization of measurement of object gripping with inertial measurement units (IMUs).

Project Work (continued)

Mar/2017 – Sep/2017

■ Control of a wind turbine for supporting power grid frequency

Contributions: Project designer, scenario builder, and experiment executor.

Descriptions: Investigated the control of wind turbines to provide operations to achieve the maximum wind power extraction and provide constant power above the rated wind speed.

Sep/2015 – Sep/2016


■ Autonomous on-water vehicle for searching and mapping

Contributions: Team member, scenario builder, and experiment executor.





Descriptions: Worked with a team and was responsible for the assembly and programming of the hardware and the setup of the experimental site. Implement automatic drawing and visualization of real-time obstacle maps.

Research Publications

Journal Articles

- 1 Li, Z., **Luo, Y.**, Wang, J., Pan, Y., Yu, L., & Liang, H.-N. (2023). Feasibility and performance enhancement of collaborative control of unmanned ground vehicles via virtual reality. *Personal and ubiquitous computing*.
- 2 **Luo, Y.**, Wang, J., Shi, R., Liang, H.-N., & Luo, S. (2022). In-device feedback in immersive head-mounted displays for distance perception during teleoperation of unmanned ground vehicles. *IEEE Transactions on Haptics*, 15(1), 79–84.  doi:10.1109/TOH.2021.3138590

Conference Proceedings

- 1 **Luo, Y.**, Wang, J., Pan, Y., Luo, S., Irani, P., & Liang, H.-N. (2023). Teleoperation of a fast omnidirectional unmanned ground vehicle in the cyber-physical world via a vr interface. In *Proceedings of the 18th acm siggraph international conference on virtual-reality continuum and its applications in industry*.  doi:10.1145/3574131.3574432
- 2 Li, Z., **Luo, Y.**, Wang, J., Pan, Y., Yu, L., & Liang, H.-N. (2022). Collaborative remote control of unmanned ground vehicles in virtual reality. In *2022 international conference on interactive media, smart systems and emerging technologies (imet)* (pp. 1–8).  doi:10.1109/IMET54801.2022.9929783
- 3 Liu, Y., Lin, Y., Shi, R., **Luo, Y.**, & Liang, H.-N. (2021). Relicvr: A virtual reality game for active exploration of archaeological relics. In *Extended abstracts of the 2021 annual symposium on computer-human interaction in play* (pp. 326–332).  doi:10.1145/3450337.3483507
- 4 **Luo, Y.**, Wang, J., Liang, H.-N., Luo, S., & Lim, E. G. (2021). Monoscopic vs. stereoscopic views and display types in the teleoperation of unmanned ground vehicles for object avoidance. In *2021 30th ieee international conference on robot & human interactive communication (ro-man)* (pp. 418–425).  doi:10.1109/RO-MAN50785.2021.9515455

In-Progress Work/Papers

Under Review

- *Augmenting Performance of VR-mediated Teleoperation of Unmanned-Ground Vehicles Using Edge Detection*

Preparing

- *Supporting Awareness in the Virtual Environment: A Comprehensive Review Teleoperation of Mobile Unmanned Robots in Virtual Reality*
- *AirNeck: A portable and precise wind haptic prototype to enhance the user's fluid-like perception in off-scene situation*

In-Progress Work/Papers (continued)

- *Edge Enhancement for Improved Teleoperation of Unmanned Ground Vehicles Using Virtual Reality*

Other Achievements

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| Awards | ■ <i>Best Paper Awards in Proceedings of the 18th ACM siggraph international conference on virtual-reality continuum and its applications in industry (VRCAI 2023)</i> |
| Academic Experiences | ■ <i>Online Volunteer in IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2022)</i>
<i>Reviewer in the 9th International Conference on Virtual Reality (ICVR 2023), in IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2022), in the 30th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2023)...</i>
<i>Organizer in the 9th International Conference on Virtual Reality (ICVR 2023, Special Session 4)</i> |

Skills

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|-----------|--|
| Coding | ■ C, C++, C#, Java, Python, R, HTML... |
| Tools | ■ Unity3D, SPSS, MS, PS, \LaTeX , Matlab, VICON... |
| Languages | ■ English (Fluent) reading, writing and speaking competencies, Chinese (Native). |
| Misc. | ■ Academic research, teaching, training, consultation, \LaTeX typesetting and publishing; Working out, playing and developing games... |