TSUNG-CHI LIN, PH.D.

Postdoctoral Fellow
Johns Hopkins University
Department of Computer Science
3400 N. Charles St., Baltimore, MD 21218, USA
tlin63@jhu.edu | lintsungchi.com | Google Scholar

RESEARCH INTERESTS

My research centers on three aspects of human-robot interaction: (1) investigating and evaluating the **human-robot interfaces** that are intuitive to learn and effective to complete tasks, (2) establishing **human-robot communication** via multimodal sensory feedback that enables transparent human-robot collaboration, and (3) designing **robot autonomy and interface assistance** that augments task performance and ease of operational efforts.

EDUCATION

Worcester Polytechnic Institute (WPI), Worcester MA, USA *2018 - 2023*
Ph.D. in Robotics Engineering
Advisor: Jane Li

National Taiwan University (NTU), Taipei, Taiwan *2012 - 2014*
M.S. in Biomedical Engineering

Yuan Ze University (YZU), Taoyuan, Taiwan *2008 - 2012*
B.S. in Mechanical Engineering

PUBLICATIONS

Journal Articles

[J4] **T. C. Lin**, A. U. Krishnan and Z. Li, "Perception and Action Augmentation for Teleoperation Assistance in Freeform Tele-manipulation", *Submitted to ACM Transactions on Human-Robot Interaction (THRI), 2023.*

[J3] **T. C. Lin**, A. U. Krishnan and Z. Li, "The Impacts of Unreliable Autonomy in Human-Robot Collaboration on Shared and Supervisory Control for Remote Manipulation", *IEEE Robotics and Automation Letters (RA-L), 2023.*

[J2] **T. C. Lin**, A. U. Krishnan and Z. Li, "Perception-Motion Coupling in Active Telepresence: Human Behavior and Teleoperation Interface Design", *ACM Transactions on Human-Robot Interaction (THRI), 2023.*

[J1] **T. C. Lin**, A. U. Krishnan and Z. Li, "Intuitive, Efficient and Ergonomic Tele-Nursing Robot Interfaces: Design Evaluation and Evolution", *ACM Transactions on Human-Robot Interaction (THRI), 2022.*

Refereed Full Conference Papers

[C11] A. U. Krishnan, **T. C. Lin** and Z. Li, "Human Preferred Augmented Reality Visual Cues for Remote Robot Manipulation Assistance: from Direct to Supervisory Control", *Accepted by IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2023.*

[C10] **T. C. Lin**, A. U. Krishnan and Z. Li, "Comparison of Haptic and Augmented Reality Visual Cues for Assisting Tele-manipulation", *International Conference on Robotics and Automation (ICRA), 2022.*

[C9] A. U. Krishnan, **T. C. Lin** and Z. Li, "Design Interface Mapping for Efficient Free-form Tele-manipulation", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022.*

[C8] **T. C. Lin**, A. U. Krishnan and Z. Li, "How People Use Active Telepresence Cameras in Tele-manipulation", *International Conference on Robotics and Automation (ICRA), 2021.*

[C7] **T. C. Lin**, A. U. Krishnan and Z. Li, "Shared Autonomous Interface for Reducing Physical Effort in Robot Teleoperation via Human Motion Mapping", *International Conference on Robotics and Automation (ICRA), 2020.*

[C6] **T. C. Lin**, A. U. Krishnan and Z. Li, "Physical Fatigue Analysis of Assistive Robot Teleoperation via Whole-body Motion Mapping", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2019.*

Short Conference Papers

[C5] J. D. Li, M. Y. Kuo, **T. C. Lin**, Y. H. Wu and T. W. Lu, "Skin Movement Artifacts Affect Calculated Knee Kinematics and Kinetics During Cycling", *International Scientific Meeting on Biomechanics, 2014.*

[C4] J. D. Li, M. Y. Kuo, T. W. Lu, **T. C. Lin**, Y. H. Wu and H. C. Hsu, "Differences of Skin Movement Artifacts during Loaded and Unloaded Cycling Exercise on the thigh and shank Using 3D Fluoroscopy", *The 1st Global Conference on Biomedical Engineering (GCBME) conjunction with 9th Asian-Pacific, 2014.*

[C3] J. D. Li, T. W. Lu, M. Y. Kuo, Y. H. Wu, **T. C. Lin** and H. C. Hsu, "Effects of Skin Movement Artifacts on Kinematics and Kinetics of the Knee During Cycling", *The 1st Global Conference on Biomedical Engineering (GCBME) conjunction with 9th Asian-Pacific, 2014.*

[C2] J. D. Li, T. W. Lu, Y. H. Wu, M. Y. Kuo, **T. C. Lin**, C. C. Lin, Y. H. Liu and H. C. Hsu, "Effects of Soft Tissue Artifacts on the Calculated Kinetic Variables of the Knee during Cycling", *13th International Symposium on 3D Analysis of Human Movement, 2014.*

[C1] J. D. Li, Y. H. Wu, T. W. Lu, **T. C. Lin**, M. Y. Kuo, C. C. Lin, Y. H. Liu and H. C. Hsu, "Comparisons of Knee Joint Loading Between Forward and Backward Pedaling on an Instrumented Cycling Ergometer Using 3D Fluoroscopy Method", *7th World Congress of Biomechanics, 2014.*

Patent

[P1] **T. C. Lin**, J. L. Pan, K. J. Pai, Z. W. Liao, Y. C. Chang, S. H. Tzao, & C. Y. Liu, "Muscle training equipment, muscle training system and muscle training method", *U.S. Patent No. 11,065,506, 2021.*

Theses

[T2] Ph.D. Dissertation

T. C. Lin, "Human-Robot Interfaces to Enable Effective and Effortless Control for Remote Manipulation of Tele-nursing Robot", *Department of Robotics Engineering, Worcester Polytechnic Institute, 2023.*

[T1] M.S. Thesis

T. C. Lin, "Three-Dimensional Finite Element Analysis of the Knee Ligaments During Cycling in Normal Young Subjects", *Department of Biomedical Engineering, National Taiwan University, 2014.*

Honors & Awards

Postdoctoral Fellowship – *Johns Hopkins Malone Center for Engineering in Healthcare, USA* *2023*

Postdoctoral Fellowship – *WPI Robotics Engineering, USA* *2023*

Best Poster Award – *WPI Graduate Research Innovation Exchange (GRIE) poster competition, USA* *2020*

The R&D 100 Award - *The R&D 100 Awards Committee and R&D Magazine, USA* *2016*

Outstanding Research Award - *Industrial Technology Research Institute (ITRI), Taiwan* *2015*

Excellent Award - *Prospective Creative Competition, ITRI, Taiwan* *2015*

Research Scholarships - *Ministry of Science and Technology, Taiwan* *2013 & 2014*

Best Poster Award - *Annual Symposium on Biomedical Engineering & Technology, Taiwan* *2013*

Excellent Award – *Creative Application of Solar Energy Competition, Ministry of Education, Taiwan* *2012*

Work and Research Experience

Intuitive Computing Laboratory, Johns Hopkins University, Baltimore MD, USA *2023 - Current*
Postdoctoral Fellow led by Chien-Ming Huang

Human-inspired Robotics (HiRo) Lab, WPI, Worcester MA, USA *2018 - 2023*
Postdoctoral Fellow and Research Assistant led by Jane Li

Industrial Technology Research Institute (ITRI), Hsinchu, Taiwan *2014 - 2018*
Associate Researcher (R&D Substitute Military Service)

Orthopaedic Engineering & Movement Analysis Lab, NTU, Taipei, Taiwan *2012 - 2014*
Graduate Researcher advised by Tung-Wu Lu

Teaching Experience

Guest Lecturer, WPI, Worcester MA, USA *Fall 2020*
RBE 526-191 Human-Robot Interaction

Teaching Assistant, WPI, Worcester MA, USA *Spring 2020*
RBE 595-191 Sp Top: Humanoid Robotics

Lab Instructor, WPI, Worcester MA, USA *Fall 2019*
RBE 3001 Unified Robotics III: Manipulation
RBE 3002 Unified Robotics IV: Navigation

Teaching Assistant, WPI, Worcester MA, USA *Spring 2019*
RBE 502-191 Robot Control

Academic Service

Journal Article Referee
ACM Transactions on Human-Robot Interaction (THRI)
IEEE Robotics and Automation Letters (RA-L)

Conference Paper Referee
International Conference on Robotics and Automation (ICRA) *2022 - Current*
International Conference on Human-Robot Interaction (HRI) *2022 - Current*
International Conference on Ubiquitous Robots (UR) 2020 & 2021

Technical Skills

Programming	ROS / Python / MATLAB / C / C++ / C# / FORTRAN
Software	Unity / Vicon Nexus 2.0 / Vicon Workstation / OpenSim / EMGworks
Design & Simulation	SolidWorks / Pro E / Inventor / ABAQUS / ANSYS