

Yitong Hu

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📄 Latest CV Updated: Oct. 16, 2026

Research Interests: Human-Centered Embodied AI, Cognitive Robotics, Human-Robot Interaction

Education

Sept. 2024 – Present

📖 **Beijing University of Post and Telecommunications (BUPT), Beijing, CN**
M.Eng. in AI, focus on Multimodal Cognition & Decision-Making and Multi-Agent System

- Supervisor: Prof. Di Guo
- Major Courses: Pattern Recognition and Machine Learning (93) [5], Deep Learning and Digital Video (97), Robot Cognitive Computing (98) [6], Frontier of Embodied Intelligence (93), AI Computing Systems (91)

Sept. 2020 – Jul. 2024

📖 **BUPT & Queen Mary University of London (QMUL), London, GB**
B.Sc(Eng). in E-Commerce Engineering with Law, focus on CS and AI

- QMUL: First-Class Honours | BUPT: Outstanding Graduate
- Undergraduate Project: "Human-Agent Collaboration Model for Situation Awareness in Cockpit" [4]
- Major Courses: Linear Algebra (91), Probability and Statistics (93), Operations Research (96), C (95), Java (93), Advanced Network Programming (91), Database (89), Introduction to AI (98), Data Mining (90)

Research Experiences

Mar. 2025 – Present

📖 **Embodied AI Lab, BUPT**
Graduate Research Assistant

Advisor: Prof. Di Guo

- **Embodied Human-AI Teamwork** [Overview]: Developed a scalable human-AI teamwork platform integrating VR participants and AI-controlled robots in shared Habitat environments. Implemented configurable robot planning and team communication, with synchronized logging to support analysis of team coordination.
- **Socially-Aware Audio-Visual Navigation** [1]: Proposed a training-free framework coupling audio-visual mapping (SAVMap) with a navigation policy for NLOS human anticipation. Led algorithm design, Habitat simulation, dataset construction, and physical Stretch 3 deployment.

Oct. 2023 – Feb. 2025

📖 **State Key Lab of Intelligent Technology and Systems, Tsinghua University**
Visiting Research Assistant

Advisor: Prof. Di Guo and Prof. Huaping Liu

- **Proactive Collaboration in Multi-Agent Systems** [3]: Co-designed an autonomous need-driven communication algorithm for dynamic team restructuring in heterogeneous multi-robot systems. Engineered the simulation environment, dataset, and baseline algorithms, and validated team efficiency through physical robot trials.
Presented insights on Multi-Agent Reinforcement Learning [7], [8].
- **Human-Agent Driving Collaboration** [4]: Developed an LMM-driven agent as undergraduate project, synthesizing multimodal data from internal and external vehicular environments into actionable directives to coordinate joint behaviors. Validated the framework in GTA V, demonstrating reduced driver cognitive load and enhanced situation awareness.

Research Experiences (continued)

Feb. 2023 – May 2023



Multi-agent Control Decision and Learning Lab, Peking University

Research Intern

Advisor: Prof. Zhongkui Li

- **Unmanned Swarm System Architecture [9]:** Validated distributed control algorithms for multi-agent systems using ROS, and proposed a software-defined simulation and control architecture targeted at unmanned swarm systems to facilitate scalable deployment.

Oct. 2021 – Apr. 2023



Software Intelligence and Social Computing Lab, BUPT

Undergraduate Research Assistant Advisor: Prof. Yi Wang and Dr. Gaowei Zhang

- **Interdisciplinary Scholar Recommendation [10]:** Led a national-level undergraduate innovation project. Constructed an academic database and proposed a scholar embedding model integrating semantic and social impact factors to facilitate collaborative network discovery.

Portfolio

* Equal Contribution ✉ Corresponding Author

Under Review

- 1 **Y. Hu**, Y. Huang, H. Liu, and D. Guo ✉, “Listen to yield: Socially-aware audio-visual navigation with non-line-of-sight anticipation,” *IEEE Robotics and Automation Letters*, 2026, ISSN: 2377-3766. 🔗 URL: <https://yitong-hu.metattri.com/portfolio/j/listen-to-yield-manuscript-2026.pdf>

In Press

- 2 Z. Zhu*, **Y. Hu***, Y. Dai, J. Fang, C. Jiang, S. Hu, and Y. Zhao. “Unified context evolution for LLM agents.” arXiv: 2606.02304 [cs.CL]. Accepted by EMNLP 2026 Main Conference, pre-published.

Journal Articles

- 3 P. Li*, S. Zhang*, W. Yang*, **Y. Hu**, Y. Wang, D. Wang, H. Li, D. Guo ✉, and H. Liu ✉, “Proactive collaboration via autonomous interaction,” *Nature Communications*, vol. 17, no. 1, p. 6306, May 9, 2026, ISSN: 2041-1723. 🔗 DOI: 10.1038/s41467-026-72797-8

Thesis

- 4 **Y. Hu**, “Design and development of a human-agent collaboration model for situation awareness in cockpit,” Apr. 24, 2024. 🔗 URL: <https://github.com/wiederholung/HCockpit>

Course Projects

- 5 **Y. Hu** and W. Yang, *MNIST digit classification based on label-noisy training data*, Jan. 8, 2025. 🔗 URL: https://yitong-hu.metattri.com/portfolio/proj/mnist_digit_classification-2025.pdf
- 6 Y. Huang, **Y. Hu**, J. Zong, L. Wang, and W. Yang, “Visuo-tactile sensor-based quality inspection of napkins,” Dec. 26, 2024. 🔗 URL: https://yitong-hu.metattri.com/portfolio/proj/visuotactile_sensorbased_quality-2024.pdf

Presentations and Talks

- 7 **Y. Hu**, “Zero-shot coordination in overcooked-AI,” Feb. 4, 2024. 🔗 URL: <https://yitong-hu.metattri.com/overcooked-baselines/>
- 8 **Y. Hu**, “Melting pot research report,” Nov. 9, 2023. 🔗 URL: <https://yitong-hu.metattri.com/melting-pot-contest-2023/>

Technical Reports

- 9 Y. Hu, *Harmony agent: Unmanned swarm system simulation and management system*, Feb. 2023.  URL: https://yitong-hu.metattri.com/portfolio/ms/harmony_agent_unmanned-2023.pdf
- 10 Y. Hu, Y. Wang, Z. Zhu, J. Wang, Y. Wang, G. Zhang, and J. Hou, “CollabXplorer: Interdisciplinary collaboration discovery and recommendation,” May 2023.  URL: https://yitong-hu.metattri.com/portfolio/ms/collabxplorer_interdisciplinary_collaboration-2023.pdf

Honors and Awards

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| 2024, 2025 | 📖 | First-class Academic Scholarship for Graduate Students , BUPT |
| 2024 | 📖 | Outstanding Graduate , BUPT |
| 2023 | 📖 | Second-class Scholarship (Rank: 8/180), BUPT |
| | 📖 | Second Prize , China Students Service Outsourcing Innovation and Entrepreneurship Competition |
| | 📖 | Honorable Mention , Mathematical Contest in Modeling |
| 2022 | 📖 | Third-class Scholarship , BUPT |

Professional Activities

Academic Services

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| 2026 | 📖 | Reviewer , IEEE Transactions on Automation Science and Engineering |
| 2025 | 📖 | Reviewer & Organizing Committee Member , Chinese Intelligent Automation Conference |
| 2023 | 📖 | Reviewer , IEEE International Conference on Systems, Man, and Cybernetics |

Memberships

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| 2025 – Present | 📖 | Student Member , Institute of Electrical and Electronics Engineers |
| 2020 – 2026 | 📖 | Student Member , Institution of Engineering and Technology |

Skills

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| Programming | 📖 | Python, Shell/Bash, Java, SQL |
| Machine Learning & AI | 📖 | PyTorch, Reinforcement Learning (Stable Baselines3, Gymnasium, PettingZoo), LLM Frameworks (vLLM, LangChain), Ultralytics |
| Robotics & Simulation | 📖 | ROS2, Isaac Sim/Lab, Habitat Sim/Lab, SoundSpaces, AI2-THOR, Unity |
| Systems & Tools | 📖 | Linux, Docker, Git, uv, W&B, $\LaTeX$, Quarto, Zotero, Figma |