

Hirokazu Shirado

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School of Computer Science
Human-Computer Interaction Institute
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Professional experience

- 2019 – Assistant Professor
Human-Computer Interaction Institute; and
Societal Computing, Software and Societal Systems (affiliated faculty),
School of Computer Science,
Carnegie Mellon University, USA
- 2024 Visiting Researcher
Okinawa Institute of Science and Technology, Japan
- 2006 – 2014 Researcher
Intelligent Systems Laboratory, Sony Corporation, Japan
- 2011 – 2012 Visiting Researcher
Department of Health Care Policy, Harvard Medical School, USA
- 2009 – 2011 Visiting Researcher
Graduate School of System Design and Management, Keio University, Japan

Education

- 2019 Ph.D., Sociology
Yale University, USA
- 2018 M.A., MPhil, Sociology
Yale University, USA
- 2006 M.S., System and Mechanical Engineering
Keio University, Japan
- 2004 B.S., Mechanical Engineering
Keio University, Japan

Publications

— *Thesis* —

H. Shirado, Autonomous-agent interventions in human network cooperation and coordination.
(**Marvin B. Sussman Best Dissertation Award**)

— *Journal articles* —

H. Shirado, S. Kasahara, and N. A. Christakis, “Emergence and collapse of reciprocity in semiautomatic driving coordination experiments with humans,” *PNAS: Proceedings of the National Academy of Science*, Vol. 120, No. 51, e2307804120, 2023.

H. Shirado, Y. T. Hou, and M. F. Jung, “Stingy bots can improve human welfare in experimental sharing networks,” *Scientific Reports*, Vol. 13, No. 17957, doi:10.1038/s41598-023-44883-0, 2023.

H. Shirado, “Individual and collective learning in groups facing danger,” *Scientific Reports*, Vol. 12, No. 6210, doi:10.1038/s41598-022-10255-3, 2022.

E. Erikson and H. Shirado, “Networks, property, and the division of labor,” *American Sociological Review*, Vol. 86, No. 4, pp. 759-786, 2021. (**Outstanding Article Publication Award**)

H. Shirado and N. A. Christakis, “Network engineering using autonomous agents increases cooperation in human groups,” *iScience*, Vol. 23, No. 9, doi:10.1016/j.isci.2020.101438, 2020.

H. Shirado, F.W. Crawford, and N. A. Christakis, “Collective communication and behaviour in response to uncertain ‘Danger’ in scenario experiments,” *Proceedings of the Royal Society A*, Vol. 476, doi:10.1098/rspa/2019.0685, 2020.

H. Shirado, G. Iosifidis, N. A. Christakis, “Assortative mixing and resource inequality enhance collective welfare in sharing networks,” *PNAS: Proceedings of the National Academy of Science*, Vol. 116, pp. 22442-22444, 2019.

H. Shirado, G. Iosifidis, L. Tassioulas, N. A. Christakis, “Resource sharing in technologically defined social networks,” *Nature Communications*, doi:10.1038/s41467-019-08935-2, 2019.

H. Shirado and N. A. Christakis, “Locally noisy autonomous agents improve global human coordination in network experiments,” *Nature*, Vol. 545, pp. 370-374, 2017.

A. Nishi, H. Shirado, and N.A. Christakis, “Intermediate levels of network fluidity amplify economic growth and mitigate economic inequality in experimental social networks,” *Sociological Science*, Vol. 2, pp. 544-557, 2015.

A. Nishi, H. Shirado, D. Rand, and N.A. Christakis, “Inequality and visibility of wealth in experimental social networks,” *Nature*, Vol. 526, pp. 426-429, 2015.

H. Shirado, F. Fu, J.H. Fowler, and N.A. Christakis, “Quality versus quantity of social ties in experimental cooperative networks,” *Nature Communications*, Vol. 4, No. 2814, doi:10.1038/ncomms3814, 2013.

Y. Nonomura, T. Miura, T. Miyashita, Y. Asao, H. Shirado, et. al., “How to identify water from thickener aqueous solutions by touch,” *Journal of the Royal Society Interface*, doi:10.1098/rsif.2011.0577, 2011.

H. Shirado, M. Konyo, and T. Maeno, “Modeling of tactile texture recognition mechanism,” *Japan Society of Mechanical Engineers*, Chapter C, Vol. 73, No. 733, pp. 2514-2522, 2007 (in Japanese).

H. Shirado, Y. Nonomura, and T. Maeno, “Development of artificial skin having human skin-like texture (Realization and evaluation of human skin-like texture by emulating surface pattern and elastic structure),” *Japan Society of Mechanical Engineers*, Chapter C, Vol. 73, No. 726, pp. 541-546, 2007 (in Japanese).

H. Shirado and T. Maeno, “Modeling of texture perception mechanism for tactile display and sensor,” *Virtual Reality Society of Japan*, Vol. 9, No. 3, pp. 235-240, 2004 (in Japanese).

— *Conference proceedings* —

E. L. Claggett, R. E. Kraut, and H. Shirado, “Relational AI: facilitating intergroup cooperation with socially aware conversational support,” *CHI'25: Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems*, No. 170, pp. 1-22, 2025.
<https://doi.org/10.1145/3706598.3713757> (**Best Paper Award**)

Y.F. Cheng, H. Shirado, and S. Kasahara, “Conversational agents on your behalf: opportunities and challenges of shared autonomy in voice communication for multitasking,” *CHI'25: Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems*, No. 160, pp. 1-18, 2025. <https://doi.org/10.1145/3706598.3714017> (**Best Paper Award**)

H. Shirado, K. Shimizu, N. A. Christakis, and S. Kasahara, “Realism drives interpersonal reciprocity but yields to AI-assisted egocentrism in a coordination experiment,” *CHI'25: Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems*, No. 693, pp. 1-21, 2025. <https://doi.org/10.1145/3706598.3713371>

Z. Zhang, M. AL-Sunni, H. Jing, H. Shirado, and Y. Nakahira, “Rethinking safe control in the presence of self-seeking humans,” *AAAI'23: the 37th AAAI Conference on Artificial Intelligence*, 2023.

E. Erikson and H. Shirado, “Network structure and the division of labor,” *Society for the Advancement of Socio-Economics*, 2019.

K. Nagasaka, A. Miyamoto, M. Nagano, H. Shirado, et. al., “Motion control of a virtual humanoid that can perform real physical interactions with a human,” *IROS: IEEE/RSJ International Conference on Intelligent Robots and Systems*, pp. 2303-2310, 2008.

H. Shirado, Y. Nonomura, and T. Maeno, “Realization of human skin-like texture by emulating surface shape pattern and elastic structure,” *HAPTICS: 14th Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems*, pp. 295-296, 2006.

Y. Mukaibo, H. Shirado, M. Konyo and T. Maeno, “Development of texture sensor emulating the tissue structure and perceptual mechanism of human fingers,” *ICRA: IEEE International Conference on Robotics and Automation*, pp. 2576-2581, 2005.

H. Shirado and T. Maeno, “Modeling of human texture perception for tactile displays and sensors,” *IEEE World Haptics Conference*, pp. 57-58, 2005. (**Best Poster Award**)

— **Books** —

M. Nakatani, Y. Kakehi, and H. Shirado, *Technology-Based Tactile Design*, Iwanami, 2011 (in Japanese).

— **Book chapters** —

H. Shirado and T. Maeno, *Tactile recognition mechanism and technology of tactile sensor and display*, Science & Technology, chapter 1, Vol. 3, 2010 (in Japanese).

Funding

- 2024 – 2026 “Facilitating Collective Action in Hybrid Systems of Humans and Machines,” NOMIS foundation (PI; \$499,927)
- 2023 – 2028 “Using Machine Intelligence to Facilitate Intergroup Communication and Cooperation in Humans,” NSF CAREER (PI; \$450,738)
- 2020 – 2022 “Hybrid Human-AI Systems to Change Collective Behavior,” Robert Wood Johnson Foundation (Co-PI; \$42,832)

Awards and Honors

- 2023 NSF CAREER award
- 2022 Outstanding Article Publication Award, ASA Section on Mathematical Sociology
- 2020 Marvin B. Sussman Best Dissertation Award, Yale Sociology
- 2016 Seed Grant Program, The National Institute of Social Science, USA
- 2007 Incentive Award, Chemical Society of Japan
- 2005 Best Poster Award, World Haptics
- 2005 Scholarship Award, Japan Scholarship Foundation

Invited talks

- 2025 *Computational Social Science Workshops*, University of Chicago, USA
- 2024 *Emerging Design and Informatics lecture series*, University of Tokyo, Japan (Remote)
- 2024 *Human-AI Teaming for Decision-Making workshop*, AI Institute for Societal Decision Making, Carnegie Mellon University, USA
- 2024 *Theoretical Sciences Visiting Program talk*, Okinawa Institute of Science and Technology Graduate University, Japan

2024 *Prosocial Dynamics talks*, the University of Amsterdam, the Netherlands

2024 The Center for Information Networks and Democracy, University of Pennsylvania, USA

2023 *Computational Social Science seminar*, Chinese University of Hong Kong, China (Remote)

2023 *CMU-Portugal talk*, Interactive Technologies Institute, Instituto Superior Técnico, University of Lisbon, Portugal

2023 Mainen Lab, Champalimaud Centre for the Unknown, Portugal

2023 Sony Corporation, Japan (Remote)

2023 Group of AI for People and Society, INESC-ID, Instituto Superior Técnico, University of Lisbon, Portugal

2023 The 37th Annual Conference of the Japanese Society for Artificial Intelligence, Japan (Remote)

2023 *Frontiers of Network Science Discover workshop*, New York University Abu Dhabi Institute, USA

2023 *Industrial Engineering seminar*, University of Pittsburgh, USA

2023 *Computational Social Science seminar*, MIT Media Lab, USA

2023 People + AI Research team, Google, USA

2022 *Computational Social Science seminar*, S3D, School of Computer Science, Carnegie Mellon University, USA

2022 Sony CSL, Japan

2022 Division of Psychology and Sociology, University of Tokyo, Japan

2022 Max Planck Institute of Animal Behavior and University Konstanz, Germany

2022 Max Planck Institute for Human Development, Germany

2022 *Human Nature Lab seminar*, Yale University, USA (Remote)

2021 *9th Computational Social Science*, Conference on Complex System, Lyon, France (Remote).

2021 *Civic AI Lab seminar*, University of Amsterdam, the Netherlands (Remote).

2021 *CREST workshop*, University of Tokyo, Japan (Remote).

2021 *Human Nature Lab seminar*, Yale University, USA (Remote)

2021 *socialBRIDGES HCI conference*, Bundeswehr University Munich, Germany (Remote).

2020 *Kansai Social Psychology seminar*, Japan (Remote).

2020 *Center for Informed Democracy and Social-cybersecurity seminar*, Carnegie Mellon University, USA (Remote).

2020 University of Konstanz, Germany (Remote).

2020 Max-Planck Institute for Human Development, Germany (Remote).

2019 Princeton University, USA.

2019 Dartmouth College, USA.

- 2019 *ALIFE 2019*, Newcastle University, UK.
- 2019 *Workshop on Visualization and Control for Neural Dynamics*, National Institute for Physiological Science, Japan.
- 2018 *Conference on Artificial Intelligence and Social Science*, The University of Electro-Communications, Japan.
- 2018 *The 35th Annual Meeting of the Japanese Cognitive Science Society*, Ritsumeikan University, Japan.
- 2018 *Workshop on Collective Behavior, Social Media, and Systemic Risk*, Princeton University, USA.
- 2018 *Distributed, Collective Computation in Biological and Artificial Systems*, Howard Hughes Medical Institute, Janelia Research Campus, USA.
- 2017 *Association for the Advancement of Artificial Intelligence 2017 Spring Symposia*, Stanford University, USA.
- 2016 *Contexts of Social Inequality*, WZB Berlin Social Science Center, Germany.
- 2016 Graduate School of System Design and Management, Keio University, Japan.

Teaching: full courses offered

“Social Perspectives in Human-Computer Interaction,” Computer Science 05-772, Graduate course, Carnegie Mellon University, Spring 2023, 2025.

“Social Web,” Computer Science 05-320/820, Undergraduate and graduate course, Carnegie Mellon University, Spring 2020, 2021, 2022, 2024.

“Social Agents,” Computer Science 05-499/899-E, Undergraduate and graduate course, Carnegie Mellon University, Fall 2024.

“Social Data Science,” Computer Science 05-499/899-E, Undergraduate and graduate course, Carnegie Mellon University, Fall 2020, 2021.

“Introduction to Human-Computer Interaction for Technology Executives,” Computer Science 05-863, Graduate course, Carnegie Mellon University, Fall 2022.

“Master of Human-Computer Interaction Capstone Project,” Computer Science 05-671, Graduate course, Carnegie Mellon University, Spring and Summer 2023.

Supervising

Postdocs Aoi Naito (2023 - Present)

PhD students Elijah Claggett (2022 - 2025), Yuxuan Li (2024 - Present), Faria Huq (2025 - Present)

Service to profession

Intramural

2022 - Award Committee, Human-Computer Interaction Institute, Carnegie Mellon University

- 2024 - 2025 Faculty Search Committee, Human-Computer Interaction Institute, Carnegie Mellon University
- 2021 - 2024 PhD Admissions Committee, Human-Computer Interaction Institute, Carnegie Mellon University
- 2020 - 2021 Faculty Search Committee, Societal Computing, Institute for Software Research, Carnegie Mellon University

Extramural

- 2023 Panelist for National Science Foundation (led by Leen Todd)
- 2023 Distinguished Reviewer for European Research Council
- 2020 - Member, Society for Computational Social Science of Japan
- 2019 - 2023 Organizer, Summer Institute in Computational Social Science Tokyo site (SICSS-Tokyo)

Ad-hoc reviews

Journals: American Journal of Sociology, American Sociological Review, European Sociological Review, iScience, Journal of Experimental Psychology: General, Journal of Royal Society Interface, Nature Aging, Nature Cities, Nature Communications, Nature Human Behavior, PLOS ONE, PNAS, PNAS Nexus, Science Advances, Scientific Reports, Sociological Methods and Research

Conferences: ACM Conference on Human Factors in Computing Systems (CHI), ACM Conference on Computer-Supported Collaborative Work and Social Computing (CSCW), International Conference on Computational Social Science (IC2S2), IEEE Transactions on Network Science and Engineering

Extra training

- 2017 Summer Institute in Computational Social Science, Princeton University, USA

Media coverage

- “We need to focus more on the social effects of AI,” *The Economist*, 2023
- “Interdisciplinary case study: understanding the cooperation of humans and robots through the collaboration of social and computer scientists,” *iScience*, 2020
- “Behaving better online,” *BBC*, 2018
- “Bad bots do good: Random artificial intelligence helps people coordinate,” *Science*, 2017
- “Pushy AI bots nudge humans to change behavior,” *Scientific American*, 2017
- “Dumb robots that make mistakes actually help humans solve problems,” *The Verge*, 2017
- “How bots acting randomly can help speed human problem-solving,” *Live Science*, 2017
- “Working with robots helps people get along,” *Science of Us*, 2017

“Making the scene: inequality,” *PBS*, 2015

Languages

Fluent English
Native Japanese