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Professional experience

Present Assistant Professor
Human-Computer Interaction Institute; and
Societal Computing, Institute for Software Research (affiliated faculty),
School of Computer Science,
Carnegie Mellon University, USA

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.

Articles

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

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. Tassiulas, 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).

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).

Conference proceedings

E. Erikson and H. Shirado, “Network structure and the division of labor,” *the Conference of the Society for the Advancement of Socio-Economics (SASE)*, 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, *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,” *Symposium on Haptic Interface 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,” *IEEE ICRA*, pp. 2576-2581, 2005.

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

Funding

2020-22 “Hybrid Human-AI Systems to Change Collective Behavior,” Robert Wood Johnson Foundation (Co-PI; \$42,832)

Awards and Honors

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

2021 “Bot interventions in networked human cooperation,” *Civic AI Lab seminar*, University of Amsterdam, the Netherlands (Remote).

- 2021 “Bot interventions in networked human cooperation and coordination,” *CREST workshop*, University of Tokyo, Japan (Remote).
- 2021 “Toward cyber-physical social experiments,” *Human Nature Lab seminar*, Yale University, USA (Remote)
- 2021 “Bot interventions in networked human cooperation,” *socialBRIDGES HCI conference*, Bundeswehr University Munich, Germany (Remote).
- 2020 “Social network effects on resource sharing,” *Kansai Social Psychology seminar*, Japan (Remote).
- 2020 “Collective communication and behavior in response to uncertain ‘Danger’ in network experiments,” *Center for Informed Democracy and Social-cybersecurity seminar*, Carnegie Mellon University, USA (Remote).
- 2020 “Disastrous effects of human networks in emergency response experiments,” *Summer seminar at Center for the Advanced Study of Collective Behaviour*, University of Konstanz, Germany (Remote).
- 2020 “Disastrous effects of human networks in emergency response experiments,” *Center for Humans and Machines seminar*, Max-Planck Institute for Human Development, Germany (Remote).
- 2019 “Experiments with social coordination in hybrid systems of humans and bots,” Princeton University, USA.
- 2019 “Experiments with coordination and cooperation in hybrid systems of humans and bots,” *Dartmouth Interdisciplinary Network Research seminar*, Dartmouth College, USA.
- 2019 “Experiments with coordination and cooperation in hybrid systems of humans and bots,” *ALIFE 2019*, Newcastle University, UK.
- 2019 “Coordination intervention in hybrid systems of humans and bots,” *Workshop on Visualization and Control for Neural Dynamics*, National Institute for Physiological Science, Japan.
- 2018 “Bots intervention in human coordination and cooperation,” *Conference on Artificial Intelligence and Social Science*, The University of Electro-Communications, Japan.
- 2018 “Hybrid systems of humans and bots optimize coordination in experimental Social Networks,” *The 35th Annual Meeting of the Japanese Cognitive Science Society*, Ritusmeikan University, Japan.
- 2018 “Disastrous network effects on human coordination in emergency response experiments,” *Workshop on Collective Behavior, Social Media, and Systemic Risk*, Princeton University, USA.
- 2018 “The intelligence of unintelligent agents: hybrid systems of humans and bots optimize coordination in experimental social networks,” *Distributed, Collective Computation in Biological and Artificial Systems*, Howard Hughes Medical Institute, Janelia Research Campus, USA.
- 2017 “The intelligence of unintelligent agents: bots-integrated human coordination in experimental social networks,” *Association for the Advancement of Artificial Intelligence 2017 Spring Symposia*, Stanford University, USA.

- 2016 “Experiments in social inequality and social coordination,” *Contexts of Social Inequality*, WZB Berlin Social Science Center, Germany.
- 2016 “Experiments in social inequality and social coordination,” Graduate School of System Design and Management, Keio University, Japan.

Teaching: full courses offered

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

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

Service to profession

Intramural

2020-2021 Faculty Search Committee, Societal Computing, Institute for Software Research, Carnegie Mellon University

Extramural

2019- Organizer, Summer Institute in Computational Social Science Tokyo site (SICSS-Tokyo)

2020- Member, Society for Computational Social Science of Japan

Ad-hoc reviews

American Sociological Review, European Sociological Review, iScience, Nature Communications, Nature Human Behavior, PLOS ONE, Science Advances, Scientific Reports, SIGCHI

Extra training

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

Media coverage

“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

References

Nicholas A. Christakis

Professor of Sociology, Medicine, and Ecology and Evolutionary Biology, Yale University
Co-director of Yale Institute for Network Science
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and Ecology and Evolutionary Biology, Yale University
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