Kei Yoshida

Doctoral Candidate
Virtual Environment Navigation Lab (VENLab)
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EDUCATION

2020 – current	**Ph.D. in Cognitive Science**, Department of Cognitive and Psychological Sciences (CoPsy), Brown University, Providence, RI Dissertation: *Pedestrian interactions at local and global levels in human crowds* (Advisor: Dr. William H. Warren)
2023 – current	**M.S. in Computer Science**, Department of Computer Science, Brown University, Providence, RI Funding support from Open Graduate Education Program, Brown University
2016 – 2020	**B.A. in Computer Science & Psychology**, Coe College, Cedar Rapids, IA Honors: *Magna Cum Laude*, Phi Beta Kappa Senior Honors Thesis: *Perceptual-motor recalibration in naturalistic and virtual environments* (Advisor: Dr. Benjamin Chihak)

RESEARCH EXPERIENCE

2020 – current	**Graduate Student Researcher,** Dept. of CoPsy, Brown University • Preliminary Exam: *Human collective behavior as visual influence networks: What we can learn from other social networks*. Conducted an extensive literature review of network analysis methods, and proposed future directions to study network structures of crowd dynamics and a new experimental design to manipulate them. • First-Year Project Report: *Reconstruction of interaction networks in walking crowds* (Advisor: Dr. William H. Warren). Analyzed behavioral data to reconstruct the structure and dynamics of leadership interaction networks in human crowds. Applied a series of mathematical and statistical measure, such as Time-Dependent Delayed Correlation (TDDC) and network theory, using MATLAB and Python.
2024	**Visiting Research Scholar,** Scuola Superiore Meridionale (Modelling and Engineering Risk and Complexity) & University of Naples Federico II (Department of Electrical Engineering and Information Technology), Naples, Italy • Conducted independent research on crowd dynamics under the supervision of Dr. Mario di Bernardo. Collaborated with an interdisciplinary team of mathematicians and engineers to exchange knowledge on experimental psychology and modeling methods. Provided experimental data for analysis and received valuable feedback on research methodology.
2019 – 2020	**Undergraduate Student Researcher,** Dept. of Psychology, Coe College • Senior Honors Thesis: *Perceptual-motor recalibration in naturalistic and virtual environments* (Advisor: Dr. Benjamin Chihak). Designed series of experiments systematically investigating recalibration effects in rotational

locomotion in naturalistic and virtual environments. Developed a virtual environment in Unity using C#.

2019 **Undergraduate Student Researcher,** Dept. of Computer Science, Coe College
- Research Project: *Technology assisted review with iterative classification* (Advisor: Dr. Stephen Hughes). Developed a software tool to explore data mining using Python and Java, and implemented a Naive Bayes classifier for text classification.

2018 – 2019 **Research Assistant,** Dept. of Psychology, Coe College
- Research Project: *Simple models of movement coordination account for limited portions of pedestrian road-crossing behavior in virtual environments* (Advisor: Dr. Benjamin Chihak). Assisted in series of experiments investigating movement-coordination strategies used for gap-interception within a virtual environment created in Unity.

2018 **Research Assistant/Software Designer,** Dept. of Psychology, Coe College
- Research Project: *How roadway design affects cyclist-motorist interactions* (Advisor: Dr. Benjamin Chihak). Collected and analyzed data for experiment exploring the effects of roadway designs on behaviors of motorists. Created the program designed to work on a device used to collect a variety of data using Arduino software and hardware (C++).

2018 **Programming Technician,** Dept. of Biology, Coe College
- Research Project: *GIS-based study on topographical preference of common tree species in Palisades-Kepler State Park, IA* (Research lead: Abhinav Shrestha). Created Python scripts used to analyze geographical data in ArcGIS software.

RELEVANT COURSES & SKILLS

Courses

Brown University (2020 – current)
  Data Science, Interdisciplinary Scientific Visualization, Computer Vision, Deep Learning, Statistical Inference, Human-Computer Interaction Seminar, Perception and Action, Computer Systems, Perceiving and Acting in 3D, Applied Regression Analysis, Information Theory

Coe College (2016 – 2020)
  Principles of Computer Graphics, Data Structures & Algorithms, Programming Languages, Interactive System Design, Object Oriented Programming, Software Engineering, Foundations of Computer Science, Foundations of Advanced Mathematics, Research Methods, Statistical Methods and Data Analysis, Sensation and Perception, Memory & Cognition, Introduction to Biopsychology, Social Psychology, Organizational Psychology, Personality, Abnormal Psychology

Programming Languages
  Python, MATLAB, C++, Julia, C#, Bash, C, SQL, R, HTML/CSS, Javascript, Java

Software & Instruments
  VS Code, Visual Studio, Git/GitHub, Jupyter Notebooks, SPSS Statistics Software, Unity,
  DJI Mavic 3 Pro (Part 107 certified UAS pilot), HTC Vive, SSH, RStudio, Atom, IntelliJ
  IDEA, Xcode, Adobe (Photoshop, Premiere, Illustrator), Paraview

Languages
  Proficient in English & Japanese (written & spoken)

RELEVANT EXPERIENCE

Teaching Experience
  2019 – current   **Teaching Assistant**
  - Brown University: CLPS-0700 Social Psychology (Fall 2023), CLPS-0010 Mind, Brain, and Behavior, (Fall 2023 & Fall 2024), CLPS-0100 Learning and Conditioning (Spring 2022)
  - Coe College: PSY-300 Statistical Methods and Data Analysis

  2017 – 2020   **Tutor**, Coe College
  - Computer Science: Computer Science I & II, Data Structures and Algorithms
  - Psychology: Introductory Psychology, Research Methods, Statistical Methods and Data Analysis, Memory and Cognition, Organizational Psychology, Personality

Relevant Experience
  2018 – 2020   **Psychology Department Student Worker**, Coe College
  - Assisted professors in the department with preparing for classes and research.

  2018   **Assistant Client Support Intern**, WatchPoint Data, Inc., Cedar Rapids, IA
  - Administered technical support, patch management through Solarwinds N-Central, implementation of a naming convention across the customer base, and other technical duties as assigned.

  2017   **IT Technician,** Coe College Information Technology
  - Responded to and resolved technical issues and difficulties throughout campus in person and via phone.

PUBLICATIONS & PRESENTATIONS

Publications
  Warren, W. H., Falandays, J. B., **Yoshida, K.,** Wirth, T. D., & Free, B. A. (2024). Human crowds as social networks: Collective dynamics of consensus and polarization. *Perspectives on Psychological Science, 19*(2), 522–537. https://doi.org/10.1177/17456916231186406

  Yoshida, K., Taylor, H., & Warren, W.H. (in press). The influence of explicit and covert leaders on human crowd motion. *Traffic and Granular Flow (TGF) Proceedings, 2025*.

  Yoshida, K., di Bernardo, M., & Warren, W. H. (2025). *Visual influence networks in walking crowds*. bioRxiv. https://doi.org/10.1101/2025.01.29.635594

Thesis & Reports

Yoshida, K. (2023). *Human collective behavior as visual influence networks: What we can learn from other social networks.* [Unpublished first-year project report, Brown University].

Yoshida, K. (2021). *Reconstruction of interaction networks in walking crowds.* [Unpublished paper for the preliminary exam, Brown University].

Yoshida, K. (2020). *Perceptual-motor recalibration in naturalistic and virtual environments.* [Undergraduate thesis, Coe College]. Coe College Stewart Memorial Library. https://coecollege.on.worldcat.org/oclc/1258120465

Research Talks (conference presentations, invited talks, workshops)

Yoshida, K., Taylor, H., & Warren, W.H. (2024, December 4). *The Influence of Explicit and Covert Leaders on Human Crowd Motion.* [Conference session]. Traffic and Granular Flow 2024, Lyon, France.

Yoshida, K. (2024, June 25). *Influence Structure & Leadership Manipulation in Walking Human Crowds.* Invited talk, seminar at Graduate School of Engineering, University of Tokyo, Japan.

Yoshida, K. (2024, April 24). *Structural Analysis of Visual Influence Networks in Walking Crowds.* Invited talk, Department of Electrical Engineering and Information Technology, University of Naples Federico II, Naples, Italy

Yoshida, K. (2024, April 12). *Structural Analysis of Visual Influence Networks in Walking Crowds.* Invited talk, Workshop on Crowd Dynamics Modelling, Scuola Superiore Meridionale, Naples, Italy.

Yoshida, K. (2023, August 17). *Structural analysis and topological manipulation of visual influence networks in walking crowds.* Invited talk, Movement Strategies, London, UK.

Warren, W.H., & **Yoshida, K.** (2023, June 30). Human crowds as visual influence networks: The question of leadership. Invited talk, "Beyond the dyad: Ecological approaches to collective dynamics" Symposium, XXI International Conference on Perception and Action, Guadalajara, Mexico.

Yoshida, K., & Warren, W. H. (2023, June 28). *Structural analysis and topological manipulation of visual influence networks in walking crowds* [Conference session]. Pedestrian and Evacuation Dynamics 2023, Eindhoven University of Technology, Eindhoven, Netherlands.

Yoshida, K. (2021, September 29). *Reconstruction of leadership interaction networks in walking crowds* [Presentation for the COPSY department]. First-Year Talks 2021, Brown University, Providence, RI.

Yoshida, K. (2020, September 17). *Perceptual-motor recalibration in naturalistic and virtual environments* [Presentation]. Perception & Action Seminar Series, Brown University, Providence RI.

Bordwell, J., Nixon, K., **Yoshida, K.**, & Chihak, B. (2019, April 24). *Perceptual-motor control strategies used by pedestrians crossing bicycle traffic in virtual environments* [Presentation]. Psychology Research Symposium 2019, Coe College, Cedar Rapids, IA.

Alarcon-Furman, Y., Thoma, R., Tollefsrud, C., **Yoshida, K.**, & Farrell, S. (2018, April 16). *The relationship between psychological capital, grit, and academic outcomes* [Presentation]. Psychology Research Symposium 2018, Coe College, Cedar Rapids, IA.

Poster Presentations

Yoshida, K., Taylor, H., & Warren, W. H. (2024, May 21). Can covert and explicit "leaders" steer and split real human crowds? *Journal of Vision, 24*(10), 1325–1325. https://doi.org/10.1167/jov.24.10.1325 Poster presented for the annual meeting of the Vision Science Society, St. Pete Beach, FL.

Yoshida, K., & Warren, W. H. (2023, May 21). Visual influence networks in walking crowds. Journal of Vision, 23(9), 5175. https://doi.org/10.1167/jov.23.9.5175 Poster presented for the annual meeting of the Vision Science Society, St. Pete Beach, FL.

Yoshida, K., & Warren, W. H. (2022, May 16). Visual interaction networks and leadership in walking crowds. *Journal of Vision*, *22*(14), 3628-3628. https://doi.org/10.1167/jov.22.14.3628 Poster presented for the annual meeting of the Vision Science Society, St. Pete Beach, FL.

Yoshida, K., & Chihak, B. (2020, November 21). *The transfer of perceptual-motor recalibration between virtual and naturalistic environments* [Poster presentation]. 61st Annual Meeting of the Psychonomic Society, held virtually.

Penalver, R. M., Glynn, L., Douglass, G., **Yoshida, K.**, Golder, M., & Hutton, H. (2019, November 16). *"50 First Dates": A community based research and service-learning project in a senior level cognitive psychology course* [Poster presentation]. 60th Annual Meeting of the Psychonomic Society, Montreal, QC, Canada.

Chihak, B., **Yoshida, K.**, & Bordwell, J. (2019, November 15). *Simple models of movement coordination account for limited portions of pedestrian road-crossing behavior in virtual environments* [Poster presentation]. 60th Annual Meeting of the Psychonomic Society, Montreal, QC, Canada.

Bordwell, J., Nixon, K., **Yoshida, K.**, & Chihak, B. (2019, April 16). *Simple models of movement coordination account for mere fractions of road-crossing behavior* [Poster presentation]. Student Research Symposium 2019, Coe College, Cedar Rapids, IA.

Yoshida, K., Shrestha, A., & Chihak, B. (2018, November 10). *How roadway design affects cyclist-motorist interactions* [Poster presentation]. 2018 Tri-State Undergraduate Psychology Research Conference, Loras College, Dubuque, IA.

Alarcon-Furman, Y., Thoma, R., Tollefsrud, C., **Yoshida, K.**, & Farrell, S. (2018, April 10). *The relationship between psychological capital, grit, and academic outcomes* [Poster presentation]. Student Research Symposium 2018, Coe College, Cedar Rapids, IA.

Alarcon-Furman, Y., Thoma, R., Tollefsrud, C., **Yoshida, K.**, & Farrell, S. (2017, November 4). *The relationship between psychological capital, grit, and academic outcomes* [Poster presentation]. 2017 Tri-State Undergraduate Psychology Research Conference, Coe College, Cedar Rapids, IA.

SCHOLARSHIP, AWARDS, & HONORS

2023	Open Graduate Education Program, Brown University
2020 – 2021	Kenneth R. and Pamela L. Galner Graduate Fellowship Recipient, Brown University ($91,241)
2020	Richard H. Bahwell Prize in Psychology, Coe College
2020	McElroy Trust Fellowship Finalist, Waterloo, Iowa
2020	Phi Beta Kappa, National Honor Society
2019	Clark Merit Scholars Finalist, Coe College
2019	Strata, Senior Women's honor society at Coe College

2019	Mortar Board, American national honor society for college seniors
2018	Psi Chi, International honor society in Psychology
2017	Alpha Lambda Delta, National honors society for first-year students

MEMBERSHIP & SERVICES

2021 – current	Vision Science Society membership
2019 – 2021	Psychonomic Society membership

Brown University (2020 – current)

2020 – current	COPSY Diversity and Inclusion Action Plan (DIAP) Committee
	2024 – 2025: Hiring and Recruitment Subcommittee Chair
2023 – 2024	International Graduate Peer Mentor
2021 – 2022	COPSY Graduate Student Representative
2021, 2024	International Student Orientation Mentor

Coe College (2016 – 2020)

2016 – 2020	International Club Executive Member (President, Vice President, Secretary)
2018 – 2020	Diversity Inclusion Collaboration Team
2017	International Students Orientation Leader

PROFESSIONAL REFERENCES

Dr. William H. Warren, Chancellor's Professor of Cognitive and Psychological Sciences, Brown University, William_Warren_Jr@brown.edu

Dr. Mario di Bernardo, Department of Electrical Engineering and Information Technology, University of Naples Federico II, mario.dibernardo@unina.it

Dr. Benjamin Chihak, Assistant Professor of Psychology, Coe College, bchihak@coe.edu