

Jonathan Edwards Dodge
<https://faculty.ist.psu.edu/jxd6067/>

EDUCATION

- Doctor of Philosophy*, Computer Science (HCI-AI) April 2022
Oregon State University, Corvallis, OR GPA 3.72
- Relevant coursework: HCI Research Methods, Persona Methods, Empirical Lab Studies of Software Development, Deep Learning, Intelligent Agents and Decision Making, Artificial Intelligence
 - DISSERTATION - “*Explanations and Processes to Enable Humans to Assess AI with Respect to Manipulable Properties*”
- Master of Science*, Computer Science (Graphics) December 2009
Oregon State University, Corvallis, OR GPA 3.70
- Relevant coursework: Graphics, Animation, Geometric Modeling, Image and Flow Synthesis, Information Visualization, Shader Programming, Graph Theory, Algorithms, Programming Languages, Object Oriented Programming, Intro to Differential Geometry, Case Study Research, Special Topics in HCI
 - THESIS - “*Studies to Inform a Visual Language for Authoring Interactive Exercise Prescriptions*”
- Bachelor of Science*, Computer Science May 2006
Harvey Mudd College, Claremont, CA GPA 3.01 (In major: 3.29)

PROFESSIONAL EXPERIENCE

- Pennsylvania State University, University Park, PA*
- Assistant Professor, College of IST Summer 2022-present
- IBM Research AI, Yorktown Heights, NY*
- Graduate Research Intern Summer 2018
- Oregon State University, Corvallis, OR*
- Research Assistant Summer 2017-Spring 2018, Fall 2018-Spring 2022
 - Teaching Assistant (Senior Design, Data Structures) Fall 2014-Spring 2015, Fall 2015-Spring 2017
 - Instructor (Data Structures) Summer 2009, Summer 2015
- Hatfield Marine Science Center, Newport, OR*
- Software Developer Winter 2010-Spring 2013
- Oregon State University, Corvallis, OR*
- Research Assistant Summer 2008
 - Teaching Assistant (Intro CS, Software Engineering II, Data Structures, Graphics) Fall 2006, Fall-Spring 2007-2008, Winter-Spring 2009
- Harvey Mudd College, Claremont, CA*
- Student Researcher Summer 2005-Spring 2006
 - Clinic Project for The Aerospace Corporation Fall 2004-Spring 2005
 - Grader/Tutor (Graphics, Software Development) Fall 2004, Fall 2005, Spring 2005, Spring 2006

EXTERNAL RESEARCH FUNDING

- G02. U.S. Army Research Office (ARO) Award # TBD October 2023-March 2025 (estimated)
MIXTAPE: Middleware for Interactive XAI with Tree-based AI Performance Evaluation.
Phase 2 proposal for Solicitation DoD STTR 22.B.
- G01. U.S. Army Research Office (ARO) Award W911NF22P0084 October 2022-March 2023
MIXTAPE: Middleware for Interactive XAI with Tree-based AI Performance Evaluation.
Phase 1 proposal for Solicitation DoD STTR 22.B.

ADVISING

- Ph.D Students

P03. Jeff Schulman (expected graduation in 2027)

P02. Shikha Soneji (expected graduation 2026)

P01. Iyadunni Adenuga (expected graduation early 2024)

- Master's Students

M04. Sourav Panda (M.S., expected graduation spring 2025)

M03. Arisha Rao (M.S., expected graduation spring 2024)

M02. Mitchell Hoelsing (M.S., expected graduation spring 2024)

M01. Sujay Koujalgi (M.S., graduated August 2023)

TEACHING

- SP24 - DS402: Explainable AI (Penn State, TBD enrolled)
- FA23 - DS402: Explainable AI (Penn State, 36 enrolled)
- SP23 - IST402: Explainable AI (Penn State, 14 enrolled)
- FA22 - DS330: Visual Analytics for Data Science (Penn State, 57 enrolled)
- SU15 - CS261: Data Structures (Oregon State, 38 enrolled)
- SU09 - CS261: Data Structures (Oregon State, ?? enrolled)

EXTERNAL SERVICE

- ACM Transactions on Intelligent Information Systems (TIIS): Reviewer 2020-2023, Distinguished Reviewer 2023-present
- ACM Conference on User Modeling and Perception (UMAP): Reviewer 2021, PC member 2023
- Human-Computer Interaction Journal: Reviewer 2022
- ACM Conference on Human Factors in Computing Systems (CHI): Reviewer 2019-2020, 2022
- ACM Conference on Intelligent User Interfaces (IUI): Reviewer 2019
- ACM Conference on Fairness, Accountability, and Transparency (FAccT): Reviewer 2023

INTERNAL SERVICE

- Faculty Search Committee (IST+ICDS Human-centered AI co-hire) 2022-2023
- Qualifying Exam Committee Member (2023, five students)
- Graduate Recruiting Committee 2023
- Ph.D. Committee Member
 - Nicholas Barron, Department of Meteorology and Atmospheric Science, 2022-?

MEMBERSHIPS AND AWARDS

- Distinguished Reviewer (2023, given by ACM TIIS for recognition of sustained service contribution over recent years)
- Best Reviewer Award (2021, given by conference organizers for insightful and supportive feedback on submissions to User Modeling, Adaptation, and Personalization (UMAP))
- Graduate Research Assistant Award (2021, given by Oregon State University's College of Engineering for outstanding achievement as a graduate research assistant)
- Workshop Organizer (2021 and 2022, for Transparency and Explanations in Smart Systems (TExSS))
- Outstanding Paper Award (2019, given by IUI conference organizers for *Explaining Models: An Empirical Study of How Explanations Impact Fairness Judgment* by Dodge et al.)
- The Aerospace Corporation Spot Award (2005, given by The Aerospace Corporation for outstanding performance on our HMC Clinic project)
- Wing Tam Award (2004, given by Harvey Mudd College annually to a student or student team for demonstrating excellence in software design and development)
- Paul Kafrissen CS Award (2002, given by Wyoming Seminary for excellence in the study of CS)
- National Merit Commended Scholar (2002)
- Eagle Scout Award (2000, Project: Constructed a building for the Lightstreet Fire Hall, from pouring the foundation to shingling)
- Trustee Achievement Scholarship (1999, given by Wyoming Seminary to students who combine outstanding performance on a competitive exam with a solid record of citizenship and achievement.)

TALKS

- T14. Faculty Candidate talk: *Explaining AI to People: Proposing then Evaluating Explanations, Processes, and Tasks*. Penn State University, 2022
- T13. Faculty Candidate talk: *Explaining AI to People: Proposing then Evaluating Explanations, Processes, and Tasks*. Washington State University, 2022
- T12. Faculty Candidate talk: *Explaining AI to People: Proposing then Evaluating Explanations, Processes, and Tasks*. UC Riverside, 2022
- T11. Faculty Candidate talk: *Explaining AI to People: Proposing then Evaluating Explanations, Processes, and Tasks*. Illinois Institute of Technology (IIT), 2022
- T10. Conference presentation: *How Do People Rank Multiple Mutant Agents?*. ACM Conference on Intelligent User Interfaces (IUI), 2022
- T09. Conference presentation: *After-Action Review for AI (AAR/AI)*. ACM Transactions on Intelligent Information Systems (TIIS), 2022
- T08. Workshop presentation: *Position: Who Gets to Harness (X)AI? For Billion-Dollar Organizations Only*. ACM IUI Workshops, 2022
- T07. Invited talk: *We Can Measure XAI Explanations Better with Templates*. Aggregate Intellect Socratic Circles (AISC), 2021
- T06. Workshop presentation: *Position: We Can Measure XAI Explanations Better with Templates*. ACM IUI Workshops, 2019
- T05. Conference Presentation: *Explaining Models: An Empirical Study of How Explanations Impact Fairness Judgment*. ACM Conference on Intelligent User Interfaces (IUI), 2019
- T04. Conference Presentation: *How the Experts Do It: Assessing and Explaining Agent Behaviors in Real-Time Strategy Games*. ACM Conference on Human Factors in Computing Systems (CHI), 2018
- T03. Conference Presentation: *Toward Foraging for Understanding of StarCraft Agents: An Empirical Study*. ACM Conference on Intelligent User Interfaces (IUI), 2018

- T02. Workshop Presentation: *What Should Be in an XAI Explanation? What IFT Reveals*. ACM IUI Workshops, 2018
- T01. Conference Presentation: *Implications for an Exercise Prescription Authoring Notation*. IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC), 2009

JOURNAL PUBLICATIONS

- J06. R. Khanna, J. Dodge, A. Anderson, R. Dikkala, J. Irvine, Z. Shureih, K. Lam, C. Matthews, Z. Lin, M. Kahng, A. Fern, and M. Burnett. *Finding AI's Faults with AAR/AI: An Empirical Study*. ACM Transactions on Interactive Intelligent Systems (TIIS), 2022.
- J05. J. Dodge, A. Anderson, R. Khanna, J. Irvine, R. Dikkala, K. Lam, D. Tabatabai, A. Ruangrotsakun, Z. Shureih, M. Kahng, A. Fern, and M. Burnett. *From "No Clear Winner?" to an Effective Explainable Artificial Intelligence Process: An Empirical Journey*. Applied AI Letters, 2021.
- J04. J. Dodge, R. Khanna, J. Irvine, K. Lam, T. Mai, Z. Lin, N. Kiddle, E. Newman, A. Anderson, S. Raja, C. Matthews, C. Perdriau, M. Burnett, and A. Fern. *After-Action Review for AI (AAR/AI)*. ACM Transactions on Interactive Intelligent Systems (TIIS), 2021.
- J03. S. Penney, J. Dodge, A. Anderson, C. Hilderbrand, L. Simpson, and M. Burnett. *The Shoutcasters, the Game Enthusiasts, and the AI: Foraging for Explanations of Real-Time Strategy Players*. ACM Transactions on Interactive Intelligent Systems (TIIS), 2021.
- J02. A. Anderson, J. Dodge, A. Sadarangani, Z. Juozapaitis, E. Newman, J. Irvine, S. Chattopadhyay, M. Olson, A. Fern, and M. Burnett. *Mental Model of Mere Mortals with Explanations of Reinforcement Learning*. ACM Transactions on Interactive Intelligent Systems (TIIS), 2020.
- J01. B. Bentow, J. Dodge, A. Homer, C.D. Moore, R.M. Keller, M. Presley, R. Davis, J. Seidel, C. Lee, and J. Betser. *Grid-enabling a Vibroacoustic Analysis Toolkit*. International Journal of High Performance Computing and Networking, 2008.

CONFERENCE PUBLICATIONS

- C13. J. Dodge, A. Anderson, M. Olson, R. Dikkala, and M. Burnett. *How Do People Rank Multiple Mutant Agents?*. ACM Conference on Intelligent User Interfaces (IUI), 2022. (62/253=25% acceptance)
- C12. (short) D. Tabatabai, A. Ruangrotsakun, J. Irvine, J. Dodge, Z. Shureih, K. Lam, M. Burnett, A. Fern, and M. Kahng. *"Why Did My AI Agent Lose?": Visual Analytics for Scaling Up After-Action Review*. IEEE Visualization and Visual Analytics (VIS), 2021.
- C11. R. Dikkala, R. Khanna, C. Matthews, J. Dodge, S. Raja, C. Hu, J. Irvine, Z. Shureih, K. Lam, A. Anderson, M. Kahng, A. Fern and M. Burnett. *Doing COVID-era Controlled Studies with Humans: Tales from the Trenches*. Cooperative and Human Aspects of Software Engineering (CHASE), 2021.
- C10. T. Mai, R. Khanna, J. Dodge, J. Irvine, K. Lam, Z. Lin, N. Kiddle, E. Newman, S. Raja, C. Matthews, C. Perdriau, M. Burnett, and A. Fern. *Keeping It "Organized and Logical": After-Action Review for AI (AAR/AI)*. ACM Conference on Intelligent User Interfaces (IUI), 2020. (61/283=22% acceptance)
- C09. A. Anderson, J. Dodge, A. Sadarangani, Z. Juozapaitis, E. Newman, J. Irvine, S. Chattopadhyay, A. Fern, and M. Burnett. *Explaining Reinforcement Learning to Mere Mortals: An Empirical Study*. International Joint Conference on Artificial Intelligence (IJCAI), 2019. (850/4752=18% acceptance)
- C08. J. Dodge, Q. V. Liao, Y. Zhang, R. Bellamy, and C. Dugan. *Explaining Models: An Empirical Study of How Explanations Impact Fairness Judgment*. ACM Conference on Intelligent User Interfaces (IUI), 2019. (71/282=25% acceptance, **Outstanding Paper**)
- C07. J. Dodge, S. Penney, C. Hilderbrand, A. Anderson, L. Simpson, and M. Burnett. *How the Experts Do It: Assessing and Explaining Agent Behaviors in Real-Time Strategy Games*. ACM Conference on Human Factors in Computing Systems (CHI), 2018. (666/2590=26% acceptance)
- C06. S. Penney, J. Dodge, C. Hilderbrand, A. Anderson, and M. Burnett. *Toward Foraging for Understanding of StarCraft Agents: An Empirical Study*. ACM Conference on Intelligent User Interfaces (IUI), 2018. (43/299=14% acceptance)

- C05. S. Greydanus, A. Koul, J. Dodge, and A. Fern. *Visualizing and Understanding Atari Agents*. International Conference on Machine Learning (ICML), 2018. (621/2473=25% acceptance)
- C04. K. Vergin, N. Jhirad, J. Dodge, C. Carlson, and S. Giovannoni. *Marine Bacterioplankton Consortia Follow Deterministic, Non-neutral Community Assembly Rules*. Aquatic Microbial Ecology, 2017.
- C03. Y. Riche, J. Dodge, and R.A. Metoyer. *Studying Always-on Electricity Feedback in the Home*. ACM Conference on Human Factors in Computing Systems (CHI), 2010. (302/1346=22% acceptance)
- C02. J. Dodge, R.A. Metoyer, and K. Gunter. *Implications for an Exercise Prescription Authoring Notation*. IEEE Symposium on Visual Languages and Human-Centric Computing (VLHCC), 2009. (20/77=29% acceptance)
- C01. R.A. Metoyer, S. Stumpf, C. Neumann, J. Dodge, J. Cao, and A. Schnabel. *Explaining How to Play Real-Time Strategy Games*. 29th SGAI International Conference on Artificial Intelligence, 2009.

WORKSHOP PUBLICATIONS

- W10. I. Adenuga and J. Dodge. *Conceptualizing the Relationship between AI Explanations and User Agency*. CHI Workshop on Human-Centered Perspectives in Explainable AI (HCXAI), 2023.
- W09. J. Dodge. *Position: The Case Against Case-Based Explanation*. IUI Workshop on Transparency and Explanations in Smart Systems (TExSS), 2022.
- W08. J. Dodge. *Position: Who Gets to Harness (X)AI? For Billion-Dollar Organizations Only*. IUI Workshop on Transparency and Explanations in Smart Systems (TExSS), 2021.
- W07. K. Lam, Z. Lin, J. Irvine, J. Dodge, Z. Shureih, R. Khanna, M. Kahng, and A. Fern. *Identifying Reasoning Flaws in Planning-Based RL Using Tree Explanations*. IJCAI-PRICAI 2020 Workshop on Explainable Artificial Intelligence, 2020.
- W06. J. Dodge and M. Burnett. *Position: We Can Measure XAI Explanations Better with Templates*. IUI Workshop on Explainable Smart Systems and Algorithmic Transparency in Emerging Technologies (ExSS-ATEC), 2020.
- W05. J. Dodge, S. Penney, A. Anderson and M. Burnett. *What Should Be in an XAI Explanation? What IFT Reveals*. IUI Workshop on Explainable Smart Systems, 2018.
- W04. S. Greydanus, A. Koul, J. Dodge, and A. Fern. *Visualizing and Understanding Atari Agents*. Neural Information Processing Systems Interpretability Workshop (NeurIPS Workshops), 2017.
- W03. J. Dodge, M. Hilton, R. A. Metoyer, J. Hunter, K. Smeltzer, C. Vijay, and A. Atkinson. *Deriving Age Diverse Personas from a Participatory Design Study on Home Electricity Feedback*. CHI Conference Extended Abstracts on Human Factors in Computing Systems, 2017.
- W02. C. Neumann, A. Schnabel, J. Dodge, R. A. Metoyer, S. Stumpf. *How Experts Explain Strategic Behavior During Real-Time Strategy Games*. Association for the Advancement of Artificial Intelligence Workshops (AAAI Workshops), 2007.
- W01. B. Bentow, J. Dodge, A. Homer, C.D. Moore, R.M. Keller, M. Presley, R. Davis, J. Seidel, C. Lee, and J. Betser. *Grid-Enabling a Vibroacoustic Analysis Application*. IEEE/ACM International Workshop on Grid Computing, 2005.

OTHER PUBLICATIONS

- O05. J. Dodge. *Explanations and Processes to Enable Humans to Assess AI with Respect to Manipulable Properties*. PhD Dissertation for Oregon State University, 2022.
- O04. T. Kuflik, J. Dodge, S. Kleanthous Loizou, B. Lim, C. Negreanu, A. Shulner-Tal, S. Stumpf. *TExSS: Transparency and Explanations in Smart Systems*. IUI Proceedings Extended-Abstract, 2022.
- O03. A. Smith-Renner, S. Loizou, J. Dodge, M.K. Lee, B. Lim, T. Kuflik, A. Sarkar, A. Shulner-Tal, and S. Stumpf. *TExSS: Transparency and Explanations in Smart Systems*. IUI Proceedings Extended-Abstract, 2021.

- O02. J. Dodge. *Studies to Inform a Visual Language for Authoring Interactive Exercise Prescriptions*. Master's Thesis for Oregon State University, 2009.
- O01. B. Bentow, J. Dodge, A. Homer, C.D. Moore, R.M. Keller, M. Presley, R. Davis, J. Seidel, C. Lee, and J. Betser. *System Management for Grid-Enabling a Vibroacoustic Analysis Application*. IEEE/IFIP Network Operations and Management Symposium (NOMS), 2006.