Anna Nickelson, Ph.D.

415.320.2027 | aanickelson@gmail.com | linkedin.com/in/annanickelson

Work Experience

U.S. Senator Ben Ray Luján (NM) Washington, DC

Senior Legislative Fellow Jan 2025 – Jan 2026

- Researched and advised Senator on policy issues including technology, telecommunications, science, research and development, and transportation as part of his work on the Senate Commerce Committee
- Served as staff lead for the Senator and external stakeholders on multiple high-profile Commerce Committee hearings, including "Winning the AI Race," by managing stakeholder engagement, drafting hearing materials, and aligning technical analysis with oversight objectives.
- Applied technical understanding of AI systems and evaluation methods to support oversight and legislative development by drafting hearing questions, questions for the record, oversight letters, and analytical memoranda that identified potential functionality, reliability, and risk considerations associated with AI technologies.
- Contributed substantively to drafting and introducing AI-related legislation, including leading on reintroducing the Language-Inclusive Support and Transparency for Online Services (LISTOS) Act and significant contributions to the Testing and Evaluation Systems for Trusted Artificial Intelligence (TEST AI) Act, ensuring statutory language reflected sound technical evaluation principles and real-world AI system considerations.

Oregon State University Corvallis, OR

Graduate Research and Teaching Assistant Sep 2018 – Jun 2024

- Defined and executed new research directions focused on assistive and ethical artificial intelligence (AI) systems
- Collaborated on interdisciplinary research in Ethical AI with the Director of the Center of Ethics and Policy at Carnegie Mellon University as part of the AI-CARING NSF Institute
- Led interdisciplinary team across three universities including researchers with backgrounds in ethics, human-robot interaction, and AI as part of the AI-CARING NSF Institute in user-focused, assistive multi-objective decision making
- Led interdisciplinary and cross-institute teams to deliver novel research, collaborative events, and publications
- Studied multiagent systems, Long Short-Term Memory (LSTM) networks, and Large Language Models (LLMs)
- Identified student needs and lead initiatives to improve robotics graduate program and curriculum development
- Taught and supported students learning the fundamentals of robotics, including probabilistic robotics, learning, controls, vision, and manipulation
- Mentored undergraduate and graduate students on research, leadership, presentation skills, and communication

Naval Research Laboratory Washington, DC

Naval Research Enterprise Graduate Intern Jun – Aug 2022

- Researched multi-objective cooperative co-evolutionary machine learning systems
- Mentored undergraduate interns on research, leadership, presentation skills, and communication

Brookings Institution Washington, DC (remote)

Graduate Research Intern, AI and Emerging Technology Initiative Jun – Aug 2020

- Researched and composed policy brief on privacy issues arising from mobile robots in a healthcare setting

Dolby Laboratories, Inc. San Francisco, CA

Associate Product Manager Sep 2012 – Oct 2018

- Project managed and coordinated technical and training summits, including local and international events with budgets of $500 to $3.2M, ensuring timely execution and alignment with operational and customer requirements.
- Engaged cross-functional teams in strategic planning to anticipate customer, training, and operational needs
- Drove technical training programs for internal worldwide support engineers for all new products and platforms, enabling smooth release and customer support
- Coordinated and maintained excellent relationships with teams across cultures, countries, and organization levels, including C-suite, to deliver high-value initiatives
- *Other titles held with similar responsibilities: Field Training Specialist and Field Training Intern*

Anna Nickelson, Ph.D.

415.320.2027 | aanickelson@gmail.com | linkedin.com/in/annanickelson

Education

Oregon State University — Corvallis, OR

Doctor of Philosophy, Robotics — Defended: June 2024

- Optimal is Not Always Best: Multi-Objective Decision Making for Adaptive AI, advised by Dr. Kagan Tumer

Masters of Science, Robotics — Defended: June 2024

California Polytechnic State University — San Luis Obispo, CA

Bachelors of Science, Mathematics — Graduated: June 2012

Research

Multi-Objective Reinforcement Learning Framework for Beneficent Artificial Intelligence [1]

- Developed a framework to integrate concept of beneficence into a Multi-Objective Reinforcement Learning system
- Published in the Journal of Neural Computing and Applications

Redefining the Behavior Space for Multi-Objective Map Elites [2]

- Propose new definitions of the behavior space for Multi-Objective Map Elites to improve search for good policies
- Published and presented at the 2024 Genetic and Evolutionary Computation Conference (GECCO)

Shaping the Behavior Space with Counterfactuals in Multi-Objective Map Elites [3]

- Incorporating counterfactual reasoning into multi-objective quality diversity to improve policy search
- Finalist for Best Student Paper at the International Conference on Evolutionary Computation Theory and Applications

Contextual Multi-Objective Path Planning [4]

- Leverage multi-objective framework to incorporate operational context into robotic path planning algorithms
- Published and presented at the 2023 International Conference on Robotics and Automation (ICRA)

Service

Skype a Scientist – Friendly Scientist — 2019 - 2024

- Connected with K-12 classrooms around the country to engage students with AI and robotics

Student Leadership Council, AI-CARING NSF Institute — 2022 – 2024

- Coordinated and collaborated with students and faculty across five universities to host semi-annual symposia
- Built curriculum to drive interdisciplinary collaborations and development of research into real-world applications, which was commended by the NSF review board as a “great success”

Presentation Skills and Science Communication for Researchers

Oregon State University – Research Experience for Undergrads, *invited* — 2019 - 2023

ME 507 – Best Practices for Graduate Researchers, *invited* — Nov 2022

AI that Benefits Humans and Humanity – Inspiration Dissemination — May 2022

Invited, Link to podcast - https://share.transistor.fm/s/0cde6c2e

First Author Publications

[1] A. Nickelson, R. Perkins, A. London, P. Robinette and K. Tumer, "Multi-objective reinforcement learning framework for beneficent artificial intelligence," *Neural Computing and Applications,* vol. 37, pp. 24773-24791, 2025.

[2] A. Nickelson and K. Tumer, "Redefining the Behavior Space for Multi-Objective Map Elites," in *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO)*, 2024.

[3] A. Nickelson, N. Zerbel, G. Dixit and K. Tumer, "Shaping the Behavior Space with Counterfactual Agents in Multi-Objective Map Elites," in *International Joint Conference on Computational Intelligence (IJCCI)*, 2023.

[4] A. Nickelson, K. Tumer and W. D. Smart, "Contextual Multi-Objective Path Planning," in *2023 IEEE International Conference on Robotics and Automation (ICRA)*, London, UK, 2023.