Ananya Nandy

Ph.D. Candidate @ UC Berkeley · Design Methodology, Human-Centered Design, & Computational Design
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Education

University of California, Berkeley, Ph.D. Mechanical Engineering — Aug 2019 – Present

University of California, Berkeley, M.S. Mechanical Engineering — Dec 2022

Massachusetts Institute of Technology (MIT), B.S. Mechanical Engineering — Sept 2015 – Jun 2019
Tau Beta Pi Honor Society, Pi Tau Sigma Honor Society | GPA: 4.9/5.0

Experience

Co-Design Lab, University of California, Berkeley — Aug 2019 – Present
Graduate Student Researcher | Advisor: Prof. Kosa Goucher-Lambert

- Developing models of how humans represent and use complex design information through computational approaches such as Bayesian optimization, active learning, and triplet embeddings
- Designed and conducted behavioral studies to investigate interactive design space exploration in VR and AI-assisted design decision making
- Developed interactive interfaces in 2D and VR to deploy and collect data for behavioral studies

Human-Centered AI Division, Toyota Research Institute — May 2023 – Aug 2023
Research Intern, Future Product Innovation | Advisor: Shabnam Hakimi, Matt Klenk

- Designed and conducted behavioral study to model semantic-to-visual design process in response to abstract concept words
- Developed interactive interface in Unity to log design actions and deploy study online

Publications

Journal

Nandy, A., & Goucher-Lambert, K. "Do Human and Computational Evaluations of Similarity Align? An Empirical Study of Product Function*."* In *ASME. J. Mech. Des*. April 2022. https://doi.org/10.1115/1.4053858

Nandy, A., Dong, A., & Goucher-Lambert, K. "Evaluating Quantitative Measures for Assessing Functional Similarity in Engineering Design." In *ASME. J. Mech. Des*. March 2022. https://doi.org/10.1115/1.4052302

Peer-Reviewed Conference Proceedings

Nandy, A., & Goucher-Lambert, K. "Adaptive Optimization of Subjective Design Attributes: Characterizing Individual and Aggregate Perceptions." In *Proc. of the ASME International Design Engineering Technical Conferences (IDETC)*. August 20–23, 2023.

Nandy, A., Smith, J., Jennings, N., Kuniavsky, M., Hartmann, B., & Goucher-Lambert, K. "VR or Not? Investigating Interface Type and User Strategies for Interactive Design Space Exploration." In *Proc. of the International Conference on Engineering Design (ICED)*. July 24–28, 2023.

Nandy, A., & Goucher-Lambert, K. "How does machine advice influence design choice? The effect of error on design decision making." In *Proc. of Design Computing and Cognition (DCC)*. July 4–6, 2022. 🏆 **Best Paper in Design Cognition**

Nandy, A., & Goucher-Lambert, K. "Aligning Human and Computational Evaluations of Functional Design Similarity." In *Proc. of the ASME International Design Engineering Technical Conferences (IDETC)*. August 17–19, 2021. 🏆 **Best Paper Nomination**

Nandy, A., Dong, A., & Goucher-Lambert, K. "A Comparison of Vector and Network-Based Measures for Assessing Design Similarity." In *Proc. of the ASME International Design Engineering Technical Conferences (IDETC)*. August 17–19, 2020.

Extended Abstract / Workshop

Jennings, N. **Nandy, A.**, Zhu, X., Wang, Y., Sui, F., Smith, J., & Hartmann, B. "GeneratiVR: Spatial

Interactions in Virtual Reality to Explore Generative Design Spaces." In *CHI Conference on Human Factors in Computing Systems Extended Abstracts*. May 2022.

Nandy, A. & Goucher-Lambert, K. "Considerations for Collaborative Human-AI Decision-Making in Engineering Design." In *Workshop on Human Centered AI at NeurIPS*. December 2021.

Teaching

Human-Centered Design Methods (MECENG292C/DESINV190) Fall 2020, 2022, 2023
Graduate Student Instructor, UC Berkeley
- Mentored 14 graduate-level project teams through human-centered design process (user research, concept generation & selection, prototyping)
- 🏆 **Outstanding Graduate Student Instructor Award (2020)**

Design Methodology (DESINV15) Spring 2022
Graduate Student Instructor, UC Berkeley
- Mentored 14 undergraduate-level project teams in introduction to human-centered design

Prototyping and Fabrication (DESINV22) Summer 2021
Graduate Student Instructor, UC Berkeley
- Assisted students (UC Berkeley and non-UC Berkeley) from interdisciplinary backgrounds complete projects for remote prototyping class

Remote Instruction of Design Skills and Methodologies Summer 2020
Graduate Student Instructor, UC Berkeley
- Developed resources for Jacobs Institute of Design Innovation to transition to remote design classes

Design and Manufacturing II (2.008) Spring 2019
Lab Assistant, MIT

Leadership, Mentorship, and Outreach

Graduate Women in Engineering Board
New Student Committee Chair Aug 2023 – Present
- Organizing orientation outreach, workshops, and buddies program with first-year and returning students

New Student Committee Member Aug 2022 – May 2023
- Helped run buddies program with first-year and returning students

Berkeley Engineering Design Scholar Program Mentor
Antonio Herrera: Human-AI Interactions in Engineering Design Jun 2023 – Aug 2023
Resham Khanna: XR as a Design Aid Jun 2021 – Aug 2021
Amy Jiang: Encouraging Sustainable Behavior through Gaming Jun 2020 – Aug 2020

Skills

Languages: Python, HTML/CSS/Javascript, C# (for Unity & Rhino/Grasshopper), R, MATLAB
Tools, Packages, & Software: Unity, Flask, BoTorch (Bayesian Optimization in PyTorch), Autodesk Fusion 360, SolidWorks
Research Methods: User Study Design, Experimental Design, Quantitative Analysis
Other: Prototyping & Fabrication (3D Printing, Laser Cutter, Electronics/Arduino, Waterjet, CNC/Machining)
Relevant Courses: Bayesian Models of Cognition, Computational Models of Cognition, Immersive Computing and Virtual Reality, Algorithmic Human-Robot Interaction, Principles and Techniques of Data Science, Designing for Emerging Technologies, User Interface Design, Intro to Machine Learning