Ananya Nandy

Ph.D. Student @ UC Berkeley · Design Methodology, Human-Centered Design, & Computational Design
Email: ananyan@berkeley.edu | Website: ananyan.github.io

Education

University of California, Berkeley — *Berkeley, CA*
Ph.D. Student (GPA: 3.9/4.0) — *August 2019 – Present*

- Advisor: Dr. Kosa Goucher-Lambert (Cognition and Computation in Design Lab)
- First-year departmental fellowship (Graduate Division Block Grant Award)

Massachusetts Institute of Technology (MIT) — *Cambridge, MA*
B.S. Mechanical Engineering (GPA: 4.9/5.0) — *September 2015 – June 2019*

- Thesis: Fabrication Process and Electromechanical Characterization of a Sliding Connector System for Modular Stretchable Electronics, Tau Beta Pi Engineering Honor Society, Pi Tau Sigma Mechanical Engineering Honor Society

Research Projects

Impact of immersion in virtual reality on behavior during design space exploration — *Fall 2021 – Present*

- Helped develop a prototype VR interface in Unity, focused on leveraging spatial interactions to navigate a design space. Designing a human-subject study to understand how the VR and screen-based interactions impact behavior when exploring a large design space during an open-ended task.

How people represent and use complex design information — *Fall 2019 – Present*

- Developing models of human decision-making using Bayesian optimization and active learning to represent subjective preference information and study how a "designer" can embody the preferences of a "user."
- Designed and conducted a study to discover a human representation of functional similarity between products by utilizing triplet embedding. Functional similarity can be used to find inspirational stimuli which can support creativity during open-ended design tasks.

Acceptance of "machine" suggestions during decisions with tradeoffs — *Summer 2021 – Summer 2022*

- Designed and conducted a behavioral study to understand when people follow right, wrong, and "neither right nor wrong" suggestions from a simulated computational model in a multi-objective decision scenario. Created an interactive interface in Unity to deploy the study online.

Teaching

Graduate Student Instructor
Human-Centered Design Methods — *Summer 2020, Fall 2020, Fall 2022, UC Berkeley*

- Developed resources for Jacobs Institute of Design Innovation to transition to remote design classes
- Mentored 14 graduate-level project teams through human-centered design process (user research, concept generation & selection, prototyping) 🏆 2021 Graduate Division Outstanding Graduate Student Instructor Award

Design Methodology — *Spring 2021, UC Berkeley*

- Mentored 14 undergraduate-level project teams in intro to human-centered design

Prototyping and Fabrication — *Summer 2021, UC Berkeley*

- Assisted students (UC Berkeley and non-UC Berkeley) from interdisciplinary backgrounds complete projects for remote prototyping class

Lab Assistant
Design and Manufacturing II — *Spring 2019, MIT*

Publications

Journal

Nandy, A., Dong, A., and Goucher-Lambert, K. (September 28, 2021). "Evaluating Quantitative Measures for Assessing Functional Similarity in Engineering Design." *ASME. J. Mech. Des*. March 2022; 144(3): 031401. https://doi.org/10.1115/1.4052302

Nandy, A., and Goucher-Lambert, K. (March 1, 2022). "Do Human and Computational Evaluations of Similarity Align? An Empirical Study of Product Function." *ASME. J. Mech. Des*. April 2022; 144(4): 041404. https://doi.org/10.1115/1.4053858

Conference

Nandy, A., & Goucher-Lambert, K. "How does machine advice influence design choice? The effect of error on design decision making." To appear in *Proceedings of Design Computing and Cognition '22*. Glasgow, Scotland, UK. July 4–6, 2022. 🏆 **Best Paper in Design Cognition**

Nandy, A., Dong, A., & Goucher-Lambert, K. "A Comparison of Vector and Network-Based Measures for Assessing Design Similarity." In *Proceedings of the ASME 2020 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. Volume 8: 32nd International Conference on Design Theory and Methodology (DTM). Virtual, Online. August 17–19, 2020. V008T08A006. ASME. https://doi.org/10.1115/DETC2020-22424

Nandy, A., & Goucher-Lambert, K. "Aligning Human and Computational Evaluations of Functional Design Similarity." In *Proceedings of the ASME 2021 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. Volume 6: 33rd International Conference on Design Theory and Methodology (DTM). Virtual, Online. August 17–19, 2021. V006T06A021. ASME. https://doi.org/10.1115/DETC2021-71905. 🏆 **Best Paper Nomination**

Extended Abstract / Workshop

Jennings, N. **Nandy, A.**, Zhu, X., Wang, Y., Sui, F., Smith, J., and Hartmann, B. "GeneratiVR: Spatial Interactions in Virtual Reality to Explore Generative Design Spaces." In *CHI Conference on Human Factors in Computing Systems Extended Abstracts*. New Orleans, LA, USA. May 2022.

Nandy, A. & Goucher-Lambert, K. (2021). "Considerations for Collaborative Human-AI Decision-Making in Engineering Design." *Workshop on Human Centered AI at NeurIPS '21*

Leadership and Outreach

Graduate Women in Engineering New Student Committee *August 2022 – Present*

- Helping organize and run a buddies program with first-year and returning students

Berkeley Engineering Design Scholar Program Mentor *June – August 2020, 2021*

- Mentored undergraduate students conducting research in design over summer

Skills

Languages: Python, R, MATLAB, HTML/CSS/Javascript, C# (for Unity & Rhino/Grasshopper)
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