Ananya Nandy

Ph.D. Candidate @ UC Berkeley · Design Creativity, Human-Centered Computing, & Behavioral Science
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Education

University of California, Berkeley — Expected Aug 2024
Ph.D. Mechanical Engineering (GPA: 3.97/4.0) — *Berkeley, CA*

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

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

Research Experience

UC Berkeley – Co-Design Lab — Aug 2019 – Present
Graduate Researcher (Advised by Kosa Goucher-Lambert) — *Berkeley, CA*

- Collected behavioral data and used computational modeling to compare psychological and computational representations of similarity and semantics, concepts fundamental to the development of creativity support tools.
- Conducted several studies exploring the use of emerging technologies for design: AI-assisted decision making, active preference learning to personalize outputs, and novel spatial interactions for large-scale design space exploration.
- Developed and deployed multiple interactive interfaces to collect data for studies (web-based and virtual reality).

Toyota Research Institute – Future Product Innovation Group — May 2023 – Aug 2023
Human-Centered AI Research Intern (Advised by Shabnam Hakimi and Matthew Klenk) — *Los Altos, CA*

- Conducted a behavioral study to understand psycholinguistics and multi-modality (text, 3D) during the design process. Developed interactive interface to log actions and deploy study online.

Skills

Research Methods: Experimental Design, Statistics, Computational Modeling, Interactive Interfaces
Languages: Python, R, HTML/CSS/Javascript, C# (for Unity & Rhino/Grasshopper), MATLAB
Tools, Packages, & Software: Unity, Flask, Python Data Science Stack (pandas, numpy, scipy, scikit-learn, BoTorch), CAD (Autodesk Fusion 360, SolidWorks, OpenSCAD/JSCAD)
Other: Prototyping & Fabrication (3D Printing, Laser Cutter, Machining, Basic Electronics/Arduino/Raspberry Pi)
Relevant Coursework: 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

Publications

Peer-Reviewed Journal Articles

1. Adopting "Blackbox" Design Advice: The Influence of Imperfect Suggestions during AI-Assisted Decision Making
   Ananya Nandy, David Antonio Herrera, Kosa Goucher-Lambert
   Design Science. Under Review.
2. Do Human and Computational Evaluations of Similarity Align? An Empirical Study of Product Function
   Ananya Nandy, Kosa Goucher-Lambert
   Journal of Mechanical Design. April 2022.
3. Evaluating Quantitative Measures for Assessing Functional Similarity in Engineering Design
   Ananya Nandy, Andy Dong, Kosa Goucher-Lambert
   Journal of Mechanical Design. March 2022. ★ **Featured Article**

Peer-Reviewed Conference Proceedings

1. Semantic properties of word prompts shape design outcomes: understanding the influence of semantic richness and similarity
   Ananya Nandy, Monica Van, Jonathan Li, Kosa Goucher-Lambert, Matthew Klenk, Shabnam Hakimi
   Design Computing and Cognition (DCC'24). Under Review.

2. Adaptive Optimization of Subjective Design Attributes: Characterizing Individual and Aggregate Perceptions
   Ananya Nandy, Kosa Goucher-Lambert
   ASME International Design Engineering Technical Conferences (IDETC'23). August 2023.
3. VR or Not? Investigating Interface Type and User Strategies for Interactive Design Space Exploration
   Ananya Nandy, James Smith, Nicholas Jennings, Michael Kuniavsky, Björn Hartmann, Kosa Goucher-Lambert
   International Conference on Engineering Design (ICED'23). July 2023.
4. How does machine advice influence design choice? The effect of error on design decision making
   Ananya Nandy, Kosa Goucher-Lambert
   Design Computing and Cognition (DCC'22). July 2022. 🏆 **Best Paper in Design Cognition/Neurocognition**
5. Aligning Human and Computational Evaluations of Functional Design Similarity
   Ananya Nandy, Kosa Goucher-Lambert
   ASME International Design Engineering Technical Conferences (IDETC'21). August 2021. ★ **Nominated for Best Design Theory & Methodology Paper**
6. A Comparison of Vector and Network-Based Measures for Assessing Design Similarity
   Ananya Nandy, Andy Dong, Kosa Goucher-Lambert
   ASME International Design Engineering Technical Conferences (IDETC'20). August 2020.

Extended Abstract & Workshop Papers

1. GeneratiVR: Spatial Interactions in Virtual Reality to Explore Generative Design Spaces
   Nicholas Jennings, **Ananya Nandy**, Xinyi Zhu, Yuting Wang, Fanping Sui, James Smith, Björn Hartmann
   ACM Conference on Human Factors in Computing Systems Extended Abstracts (CHI '22 LBW). May 2022.
2. Considerations for Collaborative Human-AI Decision-Making in Engineering Design
   Ananya Nandy, Kosa Goucher-Lambert
   NeurIPS 2021 Workshop on Human Centered AI. 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 each semester. 🏆 **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. Gave guest lecture on concept exploration and prototyping.

Prototyping and Fabrication (DESINV22) Summer 2021
Graduate Student Instructor *UC Berkeley*

- Assisted students from interdisciplinary backgrounds complete projects for remote prototyping class.

Service & Mentorship

Graduate Women in Engineering Board
New Student Committee Chair *Aug 2023 – Present*

- Leading committee for orientation outreach, professional development workshops, and buddies program with first-year and returning students.

UC Berkeley Master of Engineering Capstone Mentor
Arman Baradaran, Rajveer Oberoi, Varin Kansal *Sept 2023 – May 2024*

- Trust Measurement for Human-Machine Interaction

UC 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*