ELENA SABINSON

elena.sabinson@colorado.edu

EDUCATION

Ph.D. | Human Behavior & Design, Cornell University, 2023
Dissertation: Biophilic Soft Robotic Surfaces for Emotional Wellbeing: Supporting Inhabitants of Small Physical Spaces in Urban Environments with Limited Access to Nature.

Human Centered Design Committee Chair: Dr. Keith E. Green
Minor in Electrical & Computer Engineering, Committee Member: Dr. Kirstin H. Petersen
Minor in Human Development, Committee Member: Dr. Gary W. Evans

M.S. | Interior Architecture & Design, Drexel University, 2015
Thesis: Nurturing Emergent Synthetic Life (NESL). A computational ecology that explores the poetic potentials of a novel robotic species through gestural programming and bio-informed aesthetics.

B.A. | Binghamton University, Magna Cum Laude, 2008
Majors: Philosophy; English Literature & Creative Writing

PORTFOLIO
elenasabinson.com

TEACHING PORTFOLIO
elenasabinson.com/teaching

ACADEMIC APPOINTMENTS

Assistant Professor, Environmental Design, University of Colorado Boulder, 2023 -
Assistant Teaching Professor, Architecture, Design & Urbanism, Drexel University, 2017- 2018

RESEARCH EXPERIENCE

Lab Member: Architectural Robotics Lab, Cornell University, 2018 - 2023

My dissertation was on soft robotic surfaces for emotion regulation. The system was used to lead guided breathing exercises, visualize sound into a tangible experience, simulate soothing ocean wave movement, and provide biofeedback from plant and human biosignals.

Senior Research Assistant: Design Futures Lab, Drexel University, 2014 - 2018

My research focused on a speculative design proposal for poetic robots, fabricated with computational design tools and material exploration of salt crystals to produce an evocative visual narrative of our interactive environment, which we captured in an award-winning film.

Research & Design: Biorealize, University of Pennsylvania, 2015 - 2016

I researched and designed custom parts for an automated biolab for synthetic biology. I created a custom cuvette carousel used for electroporation and made drawings used for a successful patent application. The project resulted in a microbial design tool for citizen scientists and creatives founded by Dr. Orkan Telhan and Dr. Karen Hogan.

COURSES TAUGHT at Cornell University

Introduction to Environmental Psychology	Human-Environment Relationships

COURSES TAUGHT at Drexel University

Structure Studio	Fundamentals of Structure: Furniture & Product Design
Graduate Studio B	Conceptual Interior Spatial Volumes and Form-making
Graduate Seminar B	Diagramming and Advanced Surface Modeling
Digital Fabrication	CNC milling, 3D Printing, Laser Cutting & Casting
Visualization I	Introduction to Graphic Representation for Design
Visualization II	Orthographic Drafting for Design Communication
Visualization III	AutoCAD, SketchUp, Adobe, and Digital Rendering
Visualization V	Creative Representation & Hybrid Visualization Tools

TEACHING ASSISTANT at Cornell University

Human Centered Design Methods	Design Evaluation of Objects & Interfaces
Positive Design Studio	Support Wellbeing by Evoking Meaningful Experiences
Designing Age Friendly Environments	Children and Older Adults in Everyday Environments
Problem-Seeking through Programming	Social Science Research Informed Design Guidelines
Magnifying Small Spaces Studio	Design for Human Behavior in Micro-Environments
Disruptive Design Studio	Cultural, Spatial & Material Disruption Through Design
Design Generation(s)	Sketching, Prototyping, Graphics & Exhibition
Visual Literacy and Design Studio	2D and 3D Design Issues in Theory and Practice
Design Graphics and Visualization	Using Digital Media to Visualize 3D Space
Design Portfolio and Communication	Communicate Ideas Through Text, Image & Video
Lighting Design: Light InForming Space	Principles of Playful and Functional Lighting Design

EMPLOYMENT

Designer: Touch Design Studio, 2016 - 2017
• Worked on the design of environmental graphics, construction documents, custom furniture design, and large-scale installation pieces for projects with Johnson & Johnson and Audible.

Adjunct: Department of Architecture, Design & Urbanism, Drexel University, 2015 - 2017
• Taught visualization and studio courses on the undergraduate and graduate level.

Graduate Teaching Assistant: Drexel University, 2013 - 2014
• Assisted with Visualization courses for AutoCAD, Rhino, and digital fabrication/CAM tools.

Lab Assistant: Hybrid Making Lab, Drexel University, 2012 - 2014
• Operated the equipment and assisted students with all aspects of design and fabrication. Responsible for overseeing CNC milling, 3D printing, and laser cutting.

SOFTWARE + PROGRAMMING

Rhinoceros 3d/RhinoCAM	QGIS/ArcGIS	CNC milling
Grasshopper	Stata	3D printing
Autodesk	R/Markdown	Laser/Die cutting
Adobe Suite	Python	Molding/Casting
3ds Max	Arduino	Soft Robotics
SketchUp	TouchDesigner	Bio-Sensors
Meshmixer/Netfabb	IFTTT	Biomaterials

PUBLICATIONS

Sabinson, E., Neiberg, J., & Green, K. E. (2024). With Every Breath: Testing the Effects of Soft Robotic Surfaces on Attention and Stress. In Proceedings of the 2024 ACM/IEEE International Conference on Human-Robot Interaction (HRI '24), March 11–14, 2024. ACM, New York, NY, USA, 10 pages. https://doi.org/10.1145/3610977.3635004

Kumar, N., Chao, H.M., da Silva Tassari, B.D., **Sabinson, E.,** Walker, I., & Green, K. E. (2024.) Design of Two Morphing Robot Surfaces and Results from a User Study on What People Want and Expect of Them, Towards a "Robot-Room". In 2024 International Conference on Robotics and Automation (ICRA). (in press)

Sabinson, E., & Green, K. E. (2023). A Walk in Nature: Exploring the Creative Potentials of a Generative Design Tool for Soft Robotic Surfaces that Foster a Connection with Nature. Proceedings of the 15th Conference on Creativity and Cognition, 185–199. https://doi.org/10.1145/3591196.3593367

Steelman, A., **Sabinson, E.,** Pradhan, I., Ghatak, A. & Green, K. E. (2021) Simulating Ocean Wave Movement in a Soft Pneumatic Surface. 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) https://doi.org/10.1109/IROS51168.2021.9636056

Sabinson, E., & Green, K. E. (2021). How do we feel? User perceptions of a soft robot surface for regulating human emotion in confined living spaces. *2021 30th IEEE International Conference on Robot & Human Interactive Communication (RO-MAN)*, 1153–1158. https://doi.org/10.1109/RO-MAN50785.2021.9515499

Sabinson, E., Pradhan, I., & Evan Green, K. (2021). Plant-human embodied biofeedback (Pheb): A soft robotic surface for emotion regulation in confined physical space. *Proceedings of the Fifteenth International Conference on Tangible, Embedded, and Embodied Interaction,* 1–14. https://doi.org/10.1145/3430524.3446065

Faulk, J. D., McKee, C. C., Bazille, H., Brigham, M., Daniel, J., Jaffe, J. G., JeeEun Lee, **Sabinson, E.,** Zhou, Y., Zhu, Y., Chung, Y. & Hedge, A. (2019). Performance, Movement, Posture, and Perceived Discomfort in Active vs. Static Seating. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 63*(1), 1154–1158. https://doi.org/10.1177/1071181319631505

Koltick, N., & **Sabinson, E.** (2018). Allomimetic Behavior & Gestural Programming: Co-developed Movement between Robots and Designers. Poster session presented at the meeting of *Design Communication Association Conference*, Ithaca, NY.

(Principal Design & Fabrication): Koltick, N., Phenomenal Machines, Haus der Kulturen der Welt (HKW)'s Technosphere Magazine, Human Dossier.

(Principal Design & Fabrication): Koltick, N., & The Design Futures Lab. (2016). NESL, nurturing emergent synthetic life. Coax, Computation Communication Aesthetics & X.

(Principal Design & Fabrication): Koltick, N. (2015). Autonomous Botanist: The Poetic Potentials of New Robotic Species. ACADIA, Computational Ecologies.

PRESENTATIONS

Panelist for the Designing for Neurodiversity and Inclusion event organized by AIA St. Louis J.E.D.I. Committee, IIDA and STLNOMA (September, 2023)

Interview on Neurodiversity in the Workplace, Steelcase podcast "Work Better" (2024 lineup)

Panelist for the Participatory Research Panel event organized by Neurodiversity at Cornell (March, 2023)

ACADEMIC SERVICE

Just and Equitable Teaching course from CU Boulder's Center for Teaching and Learning. Completed a capstone project on neurodiversity affirming teaching to support neuro-inclusion in design studio courses.

Reviewer for full paper submissions, ACM conference on Computer Human Interaction, 2024, "Surfing the World."

Associate Chair for the Pictorial track, ACM conference on Tangible Embedded and Embodied Interaction, 2023, "Tangible Revolutions – being together without screens."

Associate Chair for the Work in Progress track, ACM conference on Tangible Embedded and Embodied Interaction, 2022, "Making. Things. Think."

Reviewer for full paper submissions, ACM conference on Design for Interactive Systems, 2021, "More than Human Centered Design."

AWARDS

ROS Film Festival, First Place, Real Robots: Design Futures Lab, "NESL, nurturing emergent synthetic life", 2017

Drexel University Research Day Award in Creative Arts & Design: Jay Hardman & Elena Sabinson, "A Creative Approach to Artificial Intelligence; Engaging Ethics, Empathy and Speculative Design", 2015

Collab Student Competition Finalist, "The Doppler Table" featured in the Philadelphia Museum of Art, 2013

GRANTS & FELLOWSHIPS

Graduate Fellowship, College of Human Ecology, Cornell University
Dissertation Research Grant Recipient, Cornell University
Swift Fund Grant Recipient, Drexel University