

Rosalie Hsin-Ju Lin

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I'm passionate about building soft human-computer interaction with textiles, smart materials, and wearables.

EDUCATION

Harvard University Graduate School of Design Cambridge, MA 2020 - 2022
Master of Design Studies in Technology

National Cheng Kung University Tainan, Taiwan 2013 - 2018
Bachelor of Science in Industrial Design, Minor in Life Sciences

SKILL

CAD Grasshopper, Rhino, Solidworks, AutoCAD, Keyshot

Programming C#, Python, Processing, p5.js, Arduino

Design Adobe Illustrator, Photoshop, Indesign, Premier, XD, Idea sketching

Fabrication 3D printing, CNC, Laser/Vinyl cutting, Molding, Machine sewing/embroidery/weaving

Electronic Fusion360 Eagle, PCB fabrication/validation, Soldering

WORK EXPERIENCE

Design Researcher | MIT Media Lab, Tangible Media Group Cambridge, MA Aug 2021 - now

- Designed and characterized 4D embroidery tactile interfaces using Processing/PEmbroidery to prototype 50+ swatch samples from micro stitch parameters to macro geometry transformations.
- Developed an insulating garment that regulates body temperature by heat-activated embroidered puffs that enlarge the space between the human body and the environment.
- Prototyped a fabric-based capacitive sensing acoustic controller that infers various gestures to interact with given the 2.5D tactile interface. Prototyped an actively blossom lamp shade in response to ambient heat of the light bulb.

Product Design Engineer Intern | Advanced International Multitech Kaohsiung, Taiwan 2021 Jan-Jul

- Designed 3 carbon-fiber-composite(CFC) furniture that are single-piece, multi-stiffness, modular, and foldable with braiding, weaving, and CFC resin-molding. Built a full-scale prototype that can withstand 250 lbs load (=2 adults) within 6 weeks.
- Developed mechanical characterization experiments using Instron bending/compression test to facilitate the structural and aesthetic decision of product design. Conducted 45 tests with 6 parameters to optimize the young's modulus of CFC. Evaluated product mechanical deflection using FEA, Ansys simulation.
- Applied parametric CAD design using Grasshopper for rapid geometry iterations, material optimization, production cost within manufacturing constraints. Created a 9-parameter interactive user interface using Grasshopper/HumanUI for end-user visual prototyping.

Research Intern | CMU, HCII, Morphing Matter Lab Pittsburgh, PA 2020 Mar-Sep

- Created a textile-based breast prosthesis for breast cancer survivors that is breathable, moldable, and lightweight with shape-memory yarn. Interviewed with users from different professional and cultural backgrounds to consider a broader view of pain points and user scenarios throughout the design iteration.
- Developed fabrication methods for shape-memory fabric with thermal-drawing PLA mono-filament and 3D printed scaffold that can be wove with off-the-shelf yarns.
- Used Grasshopper to iterate weaving patterns for multi-directional stretchability and density. Used Rhino to transform 3D breast geometry to 2D prosthesis patterns for flat fabrication.

PROJECT

EmbodyPaint | How To Make (Almost) Anything Instructed by Neil Gershenfeld 2021 Sep-Dec

- Created an interactive shoe/glove generating real-time visuals in web-browser and AR.
- Built a server-client networking via websocket protocol to enable real-time data streaming using ESP32 microcontroller. Mapped 9 inertial data from the IMU sensor to create corresponding visuals in p5.js/Unity.
- Designed a PCB board using Fusion360 Eagle. Fabricated PCB board using CNC milling. Validated it with multimeters and oscilloscopes.