

# Dahyun Daniel Lim

<https://www.dahyundaniellim.com> | +1 341-766-9018 | [limdan7@berkeley.edu](mailto:limdan7@berkeley.edu)

## APPOINTMENTS

Postdoctoral scholar, **University of California Berkeley** (2024 - Present)

## EDUCATION

### University of California Berkeley

Ph.D. in Mechanical Engineering, 2024

- Advisor: Dr. Grace X. Gu
- Dissertation: "Data-driven Design of Multifunctional Electromagnetic Wave Absorbing Structures"

M.S. in Mechanical Engineering, 2018

M.Eng. in Mechanical Engineering, 2016

### Korea University

B.S. in Mechanical Engineering, 2014

## RESEARCH

### Research Interests

Data-driven Design, Advanced Manufacturing, Product Design

### Publications

- [J.1] **Lim, D. D.**, Ibarra, A.I., Lee, J., Jung, J., Choi, W., & Gu, G. X\*. "A tunable metamaterial microwave absorber inspired by chameleon's color-changing mechanism", (**Science Advances – Under Revision**).
- [J.2] **Lim, D. D.**‡, Lee, J.W.‡, Park, J.W., Lee, J.M., Noh, D.W., Park, S.J., Gu, G. X\*, & Choi, W.\* "Multifunctional seamless meta-sandwich composite as lightweight, load-bearing, and broadband-electromagnetic-wave-absorbing structure", (**Additive Manufacturing – Under Revision**) (‡Denotes equal contribution)
- [J.3] **Lim, D. D.**, Lee, S.R., Lee, J.H., Choi, W.\*, Gu, G. X.\*; "Mechanical metamaterials as multifunctional broadband electromagnetic wave absorbers". **Materials Horizons**, 2024. [Paper]
- [J.4] Lee, S, Sheikh HM, **Lim, D. D.**, Gu, G. X., & Marcus, P. S.; "Bayesian-Optimized Riblet Surface Design for Turbulent Drag Reduction via Design-by-Morphing with Large Eddy Simulation". **Journal of Mechanical Design**, 2024. [Paper]
- [J.5] Wei, Z., Zhang, Z., **Lim, D. D.**, Rey, J., Jones, M., & Gu, G. X.; "Influence of bioinspired riblet topographies on the mitigation of flow-induced noise in towed sonar arrays". **Extreme Mechanics Letters**, 2024. [Paper]
- [J.6] Jin, Z., **Lim, D. D.**, Zhao, X., Mamunuru, M., Roham, S., & Gu, G. X.; "Machine learning enabled optimization of showerhead design for semiconductor deposition process.", **Journal of Intelligent Manufacturing**, 2023. [Paper]
- [J.7] Lee, J.W.‡, **Lim, D. D.**‡, Park, J.W., Lee, J.M., Noh, D.W., Gu, G. X.\*, Choi, W.\*; "Multifunctionality of additively manufactured Kelvin foam for electromagnetic wave absorption and load bearing", **Small**, 2023. [Paper]
- [J.8] Song, C., Lee, J., **Lim, D. D.**, & Choi, W.; "Rationally Tunable Phase Change Material Thermal Properties Enabled by Three-Dimensionally Printed Structural Materials and Carbon-Based Functional Additives". **International Journal of Energy Research**, 2023. [Paper]
- [J.9] Lee, S., **Lim, D. D.**, Pegg, E., & Gu, G. X.; "The origin of high-velocity impact response and damage mechanisms for bioinspired composites". **Cell Reports Physical Science**, 2022. [Paper]
- [J.10] **Lim, D. D.**‡, Park, J.W.‡, Lee, J.M., Noh, D.W., Choi, J.H., & Choi, W.\*; "Broadband Mechanical Metamaterial Absorber", **Additive Manufacturing**, 2022. [Paper]
- [J.11] **Lim, D. D.**‡, Lee, J.M.‡, Park, J.W., & Choi, W.\*; "High-resolution and electrically conductive three-dimensional printing of carbon nanotube-based polymer composites enabled by solution intercalation", **Carbon**, 2022. [Paper]

- [J.12] Lee, S.J.‡; Lee, H.M.‡; **Lim, D. D.**; Song C.H.; Choi, W.\*; "Temperature-responsive ultrasonic-wave engineering using thermoresponsive polymers", **Advanced Functional Materials**, 2021. [Paper]
- [J.13] **Lim, D.**, Georgiou, T., Bhardwaj, A., O’Connell, G. D., & Agogino, A. M.; "Customization of a 3D printed prosthetic finger using parametric modeling". **IDETC-CIE**, 2018. [Paper]
- [J.14] Schoop, E., Nguyen, M., **Lim, D.**, Savage, V., Follmer, S., & Hartmann, B.; "Drill Sergeant: Supporting physical construction projects through an ecosystem of augmented tools." **CHI Conference**, 2016. [Paper]

## Patents

- [P.1] Park, J., Song, J., Jeon, E., Lee, K., Choi, J., **Lim, D.**, Choi, W. "Mechanical Meta-material based Electromagnetic Wave Absorber", **KR102413827B1**, 2021. [Patent]
- [P.2] Park, J., Song, J., Jeon, E., Lee, K., Choi, J., **Lim, D.**, Lee, J., Choi, W. "Electrically Conductive Polymer Composites, Manufacturing Method Thereof 3D Printing method Using The Polymer Composites", **KR102669745B1**, 2021. [Patent]

## AWARDS AND HONORS

- 2024 **Soft Robotics Cover** [Cover page]: Volume 11, June 2024, selected for the cover page of *Soft Robotics* journal featuring six-bar tensegrity robot concept art.
- 2023 **International Design Excellence Awards (IDEA)** Finalist [Link]: Finalist for the IDEA competition hosted by IDSA with the concept titled EXODIA (EXOskeleton with Dynamic Individualized Adjustability) – a modular prosthetic hand.
- 2023 **CITRIS Tech Museum Exhibitions (ARMS)**: Displayed shark-skin inspired drag-reducing surface concepts in CITRIS Tech Museum located on the third floor of Sutardjadai Hall, Berkeley.
- 2022 **International Design Award (IDA)** Silver [Link]: Silver Award in Product Design (Design for Society category) for the project ‘Tensegrity deployable sensors’, in collaboration with Squishy Robotics.
- 2022 **A’ Design award** Platinum [Link]: Received the highest distinction (top 1%) for ‘Tensegrity Deployable Sensors for Disaster Areas’
- 2021 Machine Learning Driven Service Using Non-verbal Sound Award, Korea: First prize (\$3,000) for proposing a crime-preventing device utilizing machine learning.
- 2021 Artificial Intelligence Driven Vehicle Exterior Service Award, Korea: Bronze prize for accident prevention technology using AI-trained vision models
- 2018 **Lawrence Hall of Science Prosthetic hand display** [Link], [News – Daily Californian]: Displayed prototypes of Million Hands projects in Lawrence Hall of Science in collaboration with the CITRIS Invention Lab.
- 2018 **Outstanding GSI Award**, University of California Berkeley [Link]: Recognizing as an Outstanding GSI, awarded to less than 10% candidates.
- 2016 **SFMototype** [Link]: First place in the design contest for 3D printed motorcycle equipment parts, winning a Kawasaki Z125 motorcycle.
- 2014 Best Research Award of Creative Challenger Program, Korea: Awarded \$3,500 for research on a DIY stereolithography-based 3D printer.

## FUNDING AND GRANTS

- 2024 **BioEnginuity Impact Grant** [Link]: Individual grant for doctoral and postdoctoral, awarded \$40,000 per year for two years. Selected as one of the four candidates
- 2022 **Heart to Humanity (H2H8)** fellowship: Graduate research grant of \$10,000 awarded by H2H8 Non-profit organization for research in the field of Engineering.
- 2021 **CITRIS Core Seed Funding**: Lead graduate student researcher for the ‘Air-drag-reducing microstructured surfaces (ARMS) for improved fuel efficiency’ project, in collaboration with UC Davis. Received a \$60,000 research grant.

- 2017 **CITRIS Tech for social goods**: Awarded a total of \$4,000 research grant for prosthetic hand design projects with the title 'Helping hands'.
- 2017 **CITRIS Core Seed funding**: Lead graduate student researcher for the 'Million Hands: Prosthetic hands for children through an open source platform, 3D printers, and sensors' project, in collaboration with UC Davis.
- 2014 **Korea Science and Engineering Full scholarship**: Awarded a two-year full scholarship by the Korean government for STEM students demonstrating excellence in academics.

## TEACHING EXPERIENCE

### Teaching Assistant

#### **Human-centered design methods (ME 292C)** - Fall 2016, Fall 2017

- Graduate Student Instructor (GSI) for a graduate course with a class size of 70 students, teaching human-centered design methods.
- Awarded the **Outstanding GSI Award** for the Fall 2017 class.

#### **Introduction to Product Development (ME 110)** - Summer 2015, Spring 2016, Spring 2017

- GSI for an undergraduate course on the product development process, including user needs finding, prototyping, and testing.

#### **Interactive Device Design (CS294/ ME290U)** - Fall 2016

- GSI for the mechanical design component of a graduate-level course, teaching students from interdisciplinary majors to design interactive devices using rapid prototyping.

## STUDENT ADVISING

- **Alberto Ibarra**: Research and academic mentor since 2015. Guided Alberto, a Hispanic/Latino first-generation college student, from undergraduate studies in STEM (mechanical engineering) to a master's degree at UC Berkeley. Involved in prosthetic hand and stealth metamaterial research. Currently preparing his applications for doctoral programs.
- **Eric Tai**: M.Eng student in 2023. Research mentor for a soft robotics project focused on building exoskeletons for individuals with strokes.
- **Hannah Nabavi**: Undergraduate researcher mentored for a project on foldable origami wing research. Currently pursuing a master's degree at Stanford University.
- **Jui-Che (Brandon) Chang**: M.Eng student in 2023. Served as a design mentor, assisting Brandon in developing his skills in the field of product design.
- **Jacob Lopez**: Mentor for the Transfer-to-Excellence (TTE) program in Summer 2022. Guided Jacob in data-driven semiconductor device research during his summer research internship. Jacob successfully transferred from community college to UC Berkeley following the program.
- **Hailey Collier**: Mentor for the Transfer-to-Excellence (TTE) program in Summer 2023. Guided Hailey in prosthetic hand research during her summer research internship. Hailey successfully transferred from community college to UC Davis after the program.
- **M.Eng cohorts** (Six-student team): Research mentor for the 'Million Hands' project, advising six M.Eng students from the 2017 cohort.

## DIVERSITY AND OUTREACH

- **Transfer To Excellence (TTE) Summer research program** (2022-2023): Mentored community college students through a 9-weeks research program. Mentees successfully transferred to UC Berkeley and UC Davis. [\[Link\]](#)
- **3D Printing Workshop** (2022-2023): Conducted workshops introducing 3D printing and CAD modeling to undergraduate students. Activities included building a 3D printer from scratch and participating in a design competition sponsored by the department.
- **Girls in Engineering (GiE) Berkeley** (2024): Volunteered as a mentor for the Girls in Engineering summer camp at UC Berkeley, an outreach program featuring hands-on workshops to middle and high school students. Taught middle and high school students how to use 3D printers and build prosthetic hands.

## WORKSHOP PAPERS & PRESENTATIONS

- [C.1] **Lim, D.**, et al. “Additive Manufacturing of Conductive Polymer Using Stereolithography—Effects of Multi-Walled Carbon Nanotubes Reinforcement on Electrical Properties and Dimensional Accuracy, **MRS Fall meeting, 2020**
- [C.2] **Lim, D.**, et al. “3D printing of high resolution and electrically conductive composite using carbon nanotube”, **KSME 2020**
- [C.3] **Lim, D.**, et al. “Design and Fabrication Methodology for Customizable, Multi-material Prosthetic Hands for Children” ASME International Design Engineering Technical Conference (**IDETC**) **2017**
- [C.4] **Lim, D.**, et al. “Million Hands: Make It Yourself prosthetics” ACMMM 2017 Maker’s program presentation