



## RESEARCH INTERESTS

*Computational Design, Generative Design Systems, Computational Geometry, Structural Engineering, Optimization*

## EDUCATION

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| <b>Massachusetts Institute of Technology</b>   | Cambridge, MA       |
| • <i>Ph.D. in Building Technology</i>   GPA: 5.0 / 5.0<br>Advised by Prof. Caitlin Mueller (Digital Structures)      | Sep. 2023 – Present |
| <b>Carnegie Mellon University</b>  | Pittsburgh, PA      |
| • <i>M.S. in Computational Design</i>   GPA: 4.03 / 4.3<br>Advised by Prof. Daniel Cardoso Llach, Prof. Chris McComb | Sep 2021 – May 2023 |
| <b>Seoul National University</b>   | Seoul, South Korea  |
| • <i>College of Liberal Studies (Presidential Award) B.Arch, BBA</i>   GPA: 4.07 / 4.3                               | Mar 2014 – Feb 2020 |

## PUBLICATIONS

- Deep reinforcement learning for efficient exploration of combinatorial structural design spaces**  
• *Chloe S.H. Hong, Keith J. Lee, Caitlin Mueller*  
International Association for Shell and Spatial Structures (IASS) 2025
- Adaptation and Challenges in Human-AI Partnership for the Design of Complex Engineering Systems**  
• *Zeda Xu, Chloe Hong, Nicolás F. Soria Zurita, Joshua T. Gyory, Gary Stump, Hannah Nolte, Jonathan Cagan, Christopher McComb*  
International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (ASME IDETC-CIE) 2023
- Building Hanok Components & Techniques**  
• *Jeon BongHee, Kim Jihee, Hong Soohwa, Chae Uri, Kwon Ah-song*  
South Korea's Architecture and Urban Institute (AURI) 2017

## ACADEMIC SERVICES

- **NeurIPS Creative AI Track** Reviewer 2024, 2025

## AWARDS & GRANTS

- MIT Generative AI Impact Consortium (MGAIC)**  
• *\$100,000 for AI empowered human-centered design: from identifying latent human needs to generating human-guided designs of physical systems* 2025
- **Kwanjeong Educational Foundation Graduate Scholarship**  
*One of 40 recipients to be funded for doctoral studies.* 2023-2025
- **South Korea National Graduate Scholarship**  
*One of 64 recipients rewarded by the South Korean government.* 2021-2023
- **Carnegie Mellon University Merit Scholarship**  
*Merit-based scholarship for the entirety of master's degree awarded upon admission* 2021-2023
- Seoul National University**  
• *Graduated Class Representative of College of Liberal Studies* 2020  
*Merit-based Scholarship | National Scholarship for Science and Engineering | Eminence Scholarship* 2014-2020

## SELECTIVE COURSEWORK

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- SU CS224W : **Machine Learning with Graphs** *Prof. Jure Leskovec*  
*Physics informed spatial temporal graph learning*
- MIT 6.S978 : **Deep Generative Models** *Prof. Kaiming He*  
[!\[\]\(467d80e979964f7f8c752fb22248b5b7\_img.jpg\) Reinforcement Learning as Probabilistic Inference](#)
- MIT 4.450 : **Computational Structural Design and Optimization** *Prof. Caitlin Mueller*  
[!\[\]\(b71552d33dbf62adf5e5199a70ee02bf\_img.jpg\) Learning High-Performing Designs Across Topologies](#)
- MIT 6.7960 : **Deep Learning** *Prof. Philip Isola*
- MIT 6.5320 : **Geometric Computing** *Prof. Piotr Indyk*  
[!\[\]\(03134b765d1473836ff001925b1b0550\_img.jpg\) Efficient Agglomerative Hierarchical Clustering using Locality Sensitive Hashing](#)
- CMU 24679 : **Statistical Techniques in Robotics / Deep Reinforcement Learning** *Prof. David Held*  
[!\[\]\(aed6947356668967079310026052edc0\_img.jpg\) Comparison and Modification of RL Agents for Parking](#)
- CMU 24679 : **Designing and Deploying AI/ML Systems** *Prof. Chris McComb*
- CMU 24354 : **Gadgets - Sensors, Actuators and Processors** *Prof. Douglas Weber*  
[!\[\]\(e61aeb0d9066d5d9e54d9b655f50da3d\_img.jpg\) Sensor based Dynamic Projection Mapping](#)

## EXPERIENCE

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- **Massachusetts Institute of Technology** Cambridge, MA  
*Teaching Assistant* 2025
  - 4.453 Creative Machine Learning for Design The course focuses on applications of machine learning for creative design generation and data-informed design exploration, with an emphasis on visual and 3D generative systems. For a 30 person class, I graded assignments, advised final projects and gave a lecture on reinforcement learning for design tasks.
- **Autodesk** San Francisco, CA  
*Research Intern* 2022
  - [!\[\]\(31b03e46ee8a80a1f1467b8c03bd76e8\_img.jpg\) RevitAssembly](#) I developed an assembly-aware graph representation for 3D models of building components involving geometric and semantic compositional constraints. I queried and linked geometric data and tabular annotations from Revit 3D models to generate a dataset used for generative tasks.
- **Carnegie Mellon University** Pittsburgh, PA  
*Research Assistant* 2021-2022
  - [!\[\]\(7d9665ff04f9d2270c38081c6215a724\_img.jpg\) Robotic Concrete Additive Manufacturing](#) I designed material studies to visualize and quantify the permeation patterns of binders within concrete batches at a macro level and developed a physics-based particle simulation tool that predicts water absorption and penetration at the micro level. These studies informed the software printing parameters and hardware design for robotic concrete printing.
- **Human-Centered Computer Systems Lab, Seoul National University** Seoul, South Korea  
*Research Intern* 2021
  - [!\[\]\(7cea648fec4dfc1e99934873e9173b69\_img.jpg\) Bidirectional Telepresence](#) I proposed a human-centered system for telepresence that integrates sensing user attention through gaze and matching coordinates of two different spaces based on body position and spatial functionality.
- **Seoul National University** Seoul, South Korea  
*Research Intern* 2017-2021
  - [!\[\]\(48ceb66414885cacc3f139b4fa359213\_img.jpg\) JoineryBIM](#) I developed a parametric data structure for designing complex wooden joinery, used to facilitate the design of *Hanok*, Korea's traditional building typology, in BIM software.
  - Architecture Practice I developed computational tools to facilitate the design and fabrication for private galleries, residencies the *Venice Architecture Biennale* (2018), *Venice Art Biennale Korea* exhibition space (2019), *Hyundai Outlet Mall* (2019), and *Hyundai Motors Future Lab* (2020) (with *Herzog de Meuron*).

## SKILLS

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- **Languages** : Python, C/C++, Julia, MATLAB
- **Frameworks** : PyTorch, Tensorflow & Keras
- **3D software** : Rhino, Grasshopper, Unity, Adobe Design Suite
- **Prototyping** : 3D printing, CNC milling, Laser cutting