



## RESEARCH INTERESTS

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*Computational Design, Computational Geometry, Generative Models, Reinforcement Learning, Optimization, Fabrication*

## 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

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- 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

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- **NeurIPS Creative AI Track** Reviewer 2024

## SELECTIVE COURSEWORK

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- MIT 6.S978 : **Deep Generative Models** Prof. Kaiming He  
[Reinforcement Learning as Probabilistic Inference](#)
- MIT 4.450 : **Computational Structural Design and Optimization** Prof. Caitlin Mueller  
[Learning High-Performing Designs Across Topologies](#)
- MIT 6.7960 : **Deep Learning** Prof. Philip Isola
- MIT 6.5320 : **Geometric Computing** Prof. Piotr Indyk  
[Efficient Agglomerative Hierarchical Clustering using Locality Sensitive Hashing](#)
- MIT 18.085 : **Computational Science and Engineering** Prof. David Kouskoulas
- CMU 24679 : **Statistical Techniques in Robotics / Deep Reinforcement Learning** Prof. David Held  
[Comparison and Modification of RL Agents for Parking](#)
- CMU 15387 : **Computational Perception** Prof. Tai Sing Lee
- CMU 24679 : **Designing and Deploying AI/ML Systems** Prof. Chris McComb
- CMU 15281 : **Artificial Intelligence: Representation and Problem Solving** Prof. Stephanie Rosenthal
- CMU 24354 : **Gadgetry - Sensors, Actuators and Processors** Prof. Douglas Weber  
[Sensor based Dynamic Projection Mapping](#)
- CMU 15122 : **Principles of Imperative Computation**

## EXPERIENCE

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- **Autodesk** San Francisco, CA  
*Research Intern* May 2022 - Aug 2022
  - [RevitAssembly](#) I developed a pipeline to create 3D model datasets with user-generated procedural information that can support ML-based systems for design data exchange on the cloud platform, Forge. I use a novel approach to extract user annotations of dimensions and geometric constraints from Revit 3D models and output a graph representation of the topology and shape.
- **Carnegie Mellon University** Pittsburgh, PA  
*Research Assistant* Sep 2021 - May 2022
  - [Robotic Concrete Additive Manufacturing](#) I designed material studies to visualize and quantify the permeation patterns of the binder within the concrete batch at a macro level and developed a physics-based particle simulation tool with Grasshopper 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* Apr 2021 - Aug 2021
  - [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.
- **Architecture History Lab, Seoul National University** Seoul, South Korea  
*Research Intern* Dec 2016 - Apr 2017, Apr 2021 - Aug 2021
  - [Building Hanok Components & Techniques](#) I created a glossary and translation for the book 'Building Hanok Components & Techniques', published by South Korea's Architecture and Urban Institute (AURI). Based on historical archives, I document the components and building process for the traditional Korean building typology, *Hanok*, while establishing terminology for the distinct structural wooden joinery based on their functions and geometry, and processes for assembling and crafting building components only previously passed down through apprenticeship.
  - [JoineryBIM](#) I developed a parametric data structure fit for complex wooden joinery, used in Revit to facilitate the design of *Hanok*, Korea's traditional building typology, in BIM software.
- **Lab for Architecture Culture, Seoul National University** Seoul, South Korea  
*Research Intern* Jan 2017 - Dec 2020
  - **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*).

## AWARDS

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- **Kwanjeong Educational Foundation Graduate Scholarship** 2023-2025  
*One of 40 recipients to be funded for doctoral studies.*
- **South Korea National Graduate Scholarship** 2021-2023  
*One of 64 recipients rewarded by the South Korean government.*
- **Carnegie Mellon University Merit Scholarship** 2021-2023  
*Merit-based scholarship for the entirety of master's degree awarded upon admission*
- **SNU Presidential Dean's Award** 2020  
*Awarded as the class representative for the class of 2020 College of Liberal Studies*
- **SNU Merit Scholarships** 2014-2015  
*Merit-based Scholarship*
- **National Scholarship for Science and Engineering** 2015-2017  
*Eminence Scholarship*
- **National Scholarship for Science and Engineering** 2017-2020  
*Eminence Scholarship*

## 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