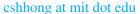
Chloe (Soo hwa) Hong



Mar 2014 – *Feb* 2020







RESEARCH INTERESTS

Computational Design, Computational Geometry, Reinforcement Learning, Optimization

EDUCATION

Massachusetts Institute of TechnologyCambridge, MA• Ph.D. in Building Technology | GPA: 5.0 / 5.0Sep. 2023 – PresentAdvised by Prof. Caitlin Mueller (Digital Structures)Pittsburgh, PA• M.S. in Computational Design | GPA: 4.03 / 4.3Sep 2021 – May 2023Advised by Prof. Daniel Cardoso Llach, Prof. Chris McCombSeoul, South Korea

PUBLICATIONS

Deep reinforcement learning for efficient exploration of combinatorial structural design spaces

• <u>Chloe S.H. Hong</u>, <u>Keith J. Lee</u>, <u>Caitlin Mueller</u> International Association for Shell and Spatial Structures (IASS) 2025

• College of Liberal Studies (Presidential Award) B.Arch, BBA | GPA: 4.07 / 4.3

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

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•	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 awared upon admission	2021-2023
•	Seoul National University Graduated Class Representative of College of Liberal Studies Merit-based Scholarship National Scholarship for Science and Engineering Eminence Scholarship	2020 2014-2020

SELECTIVE COURSEWORK

SU CS224W: Machine Learning with Graphs Prof. Jure Leskovec

Physics informed spatial temporal graph learning

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*

L'Efficient Agglomerative Hierarchical Clustering using Locality Sensitive Hashing

CMU 24679: Statistical Techniques in Robotics / Deep Reinforcement Learning Prof. David Held

Comparison and Modification of RL Agents for Parking

CMU 24679: **Designing and Deploying AI/ML Systems** *Prof. Chris McComb*

CMU 24354: Gadgetry - Sensors, Actuators and Processors Prof. Douglas Weber

Sensor based Dynamic Projection Mapping

EXPERIENCE

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

<u>C. RevitAssembly</u> 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

o 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

2021

Research Intern

• <u>I Bidirectional Telepresence</u> 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

- <u>Lanok</u>, Korea's traditional building typology, in BIM software.
- o Architecture Practice I developed computational tools to facilitate the design and fabrication for private galleries, residentials 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

• 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