

Jihoon Chung

CONTACT INFORMATION

Center for Architecture Science and Ecology
Rensselaer Polytechnic Institute
New York, United States

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RESEARCH INTERESTS

Computational Design / Building Information Modeling / Machine Learning
digital fabrication, 3D concrete printing, printing simulation analysis, spatial network analysis, parametric design, Internet of Things, interoperability, technical specification, deep learning, computer vision (object detection, facial recognition), natural language process (text classification)

EDUCATION

Rensselaer Polytechnic Institute, New York, United States

Ph.D., Architectural Science (Built Ecologies), August 2021 – Current

- Advisor: Dr. Dennis Shelden

Yonsei University, Seoul, Korea

M.S., Architectural Engineering (Construction IT), GPA: 3.97/4.0, February 2021

- Thesis: “Technical Specification Framework for 3D Concrete Printers”
- Advisor: Dr. Ghang Lee

Yonsei University, Seoul, Korea

B.Arch, Architecture (5-year program), February 2019

- Thesis: “Haebang-ro: Relationship between Haebang-chon and Yongsan Park”
- Advisor: Moongyu Choi

National University of Singapore, Singapore

Exchange Program for two semesters in AY2017

RESEARCH & WORK EXPERIENCE

Center for Architecture Science and Ecology, New York

August 2021 – Current

Research Assistant

- Developed a monitoring system for indoor air quality based on BIM & IoT sensors
- Researched on web data system for building information interoperability

Saman Corporation, South Korea

February 2021 – August 2021

Researcher

- Proposed application services using real-time data collected from IoT sensors on construction sites in a national research project 'Development of and digital twin platform for smart construction'
- Assisted to prepare kick-off meetings and presentations in a national research project 'XR Flagship Project (Construction part)'
- Wrote Bills of Quantities in a pilot design project on a box culvert organized by Korea Expressway Corporation

Building Informatics Group, Yonsei University

February 2018 – January 2021

Research Assistant

- Proposed a technical specification framework for 3D concrete printers through a systematic literature review and a Delphi study
- Developed a multi-dimensional classification algorithm for housing defect text data using BERT-based multitask learning technique (Recurrent Neural Network)
- Explored optimization algorithm for buildability of 3D concrete printing focused on operation planning and concrete properties

Yonsei University, South Korea
Teaching Assistant

March 2019 – June 2020

- Assisted an undergraduate course on the 'Engineering-Information Processing' in Semester 1, AY2020
- Managed a computer lab for undergraduate students and the research group's website in Semester 1, AY2019

ATEAM Ventures, South Korea
Strategic Planning staff

May 2015 – August 2015

- Planned strategies for marketing & sales and held a 3D-printer exhibition at KINTEX, Ilsan
- Installed a factory to assemble 3D-printers and managed mechanical components
- Managed all customer inquiries, wrote customer manuals, and sent thank-you letters to early customer

XbarX (X_X), South Korea
Sales Director & Co-founder

May 2014 – February 2015

- Launched a beer recommendation app and beer-distribution platform
- Got partnership with 218 beer pub, bar, and restaurant in Seoul, South Korea
- Got a shared 3rd award with a \$4,500 cash prize in 'The 3rd Chung Ju-young Start-up Competition' and funding, \$140,000 from a start-up accelerator

PUBLICATIONS

Lee, G., **Chung, J.**, and Kim, J. (2021) "On What Basis Should We Buy a 3D Concrete Printer?" *Building Construction*, 21(4), 31-34.

Chung, J., Lee, G., and Kim, J. (2021) " Framework for Technical Specifications of 3D Concrete Printers" *Automation in Construction*, 127, 103732, <https://doi.org/10.1016/j.autcon.2021.103732>

(*Submitted*) Woo, J., **Chung, J.**, and Koo, H. (2021) " A Study on the Pedestrian Route Choices and Accessibility in the Retail Areas after Acute COVID-19: Focused on the Peak Commercial Activity's Hours in the Mangwon District" *Journal of the Urban Design Institute of Korea*

Chung, J., Lee, G., Kim, J. and Choi, J. (2020) "A Comparative Analysis of the Classification System for Three-Dimensional Concrete Printers" *Korean Journal of Construction Engineering and Management*, 21(2), 3-14, <https://doi.org/10.6106/KJCEM.2020.21.2.003>

Chung, J., Lee, G., and Kim, J. (2020) "A Systematic Review of the Geographic and Chronological Distributions of 3D Concrete Printers from 1997 to 2020", *Proceedings of the 37th International Symposium on Automation and Robotics in Construction (ISARC)*, pp. 84-19, Kitakyushu, Japan, 27-28 Oct., <https://doi.org/10.22260/ISARC2020/0014>

Lee, G., Cho, J., Song, T., Roh, H., Jung, J., **Chung, J.**, Yong, G., and Jeong, D. (2020) "Construction Field Management Using a Popular Text Messenger" *Proceedings of the 18th International Conference on Computing in Civil and Building Engineering*, pp. 971-979, https://doi.org/10.1007/978-3-030-51295-8_67

Chung, J., Lee, G., and Kim, J. (2018), "Performance Evaluation Criteria for Building 3D Printing Focused on Concrete Properties", *Proceedings of the 2018 Annual Conference of the Korea Institute of Construction Engineering and Management*, pp. 27-29, South Korea, 9 Nov.

PATANT

Kim, J., Lee, G., Lee, D., Lee, J., **Chung, J.** (2020), "3D printer for construction with continuous printing on the go and 3D printing system comprising it", Application Serial No. KR20200101482A, South Korea, <https://patents.google.com/patent/KR20200101482A/ko>

HONORS
& AWARDS

Research Assistantship Award for 2021-2022 academic year <i>Rensselaer Polytechnic Institute, New York</i>	August 2021
The 17th Outstanding Thesis Competition , Honorable Mention <i>Architectural Institute of Korea, South Korea</i>	April 2021
2019 Yonsei Startup Lab Contest (\$2,700) , Best Startup Award <i>Yonsei University, South Korea</i>	July 2019
2018 KICEM Annual Conference , Excellent Paper Award <i>Korea Institute of Construction Engineering and Management, South Korea</i>	November 2018
Academic Scholarship for four semesters <i>Yonsei University, South Korea</i>	March 2016 – September 2018
The 12th Architectural Engineering Competition (\$900) , Excellent Award <i>The Korean Structural Engineers Association, South Korea</i>	September 2016
Volunteer Full-Scholarship for two semesters <i>Dongbu Foundation, South Korea</i>	March & September 2016
The 3rd Chung Juyung Startup Competition (\$4,500) , Excellent Startup Award <i>The Asan Nanum Foundation, South Korea</i>	August 2014
The 18th National Boxing Competition for Non-Athlete , The 1 st Prize <i>Korea Boxing Institution, South Korea</i>	August 2012

PRESENTATIONS

Build an IoT monitoring system for your smart home <i>Virtual Black Families Technology Awareness Day 2022, New York</i>	February 12, 2022
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SKILLS

Programming Languages: Python, JAVA, C#, C++, Javascript (Node.js, Three.js), P5
Processing, SQL
CAD/CAE: Rhino(+Grasshopper), Revit(+Dynamo), Sketchup, CATIA, AutoCAD, Midas Civil
Design tools: Photoshop, Illustration, Indesign, Premiere Pro, Experience Design
Machining: Arduino, Raspberry Pi, 3D printer, Laser Cutter
Others: SPSS, Tensorflow(+Keras), Pytorch, Protégé

LEADERSHIP
EXPERIENCES

Project leader , Social Algorithm 7.0 Workshop <ul style="list-style-type: none">Led a team project in an international online-workshop organized by Social Algorithm Research GroupAnalyzed spatial network using Rhino + Grasshopper with Python, and conducted on-site surveys for the validationBased on the analysis result, submitted a journal article to <i>Journal of the Urban Design Institute of Korea</i>	August 2020
Casting Director & Co-founder , We Ask, Korea <ul style="list-style-type: none">Co-founded a conference-planning organization called '젊음이 묻습니다', gathering 100+ NGO-interested studentsInvited 30+ celebrities to have talks with students, such as Im Kwon-taek, Ko Un, Kim Jung-man, and so onGot sponsorships from publishers, theatres, and student councils to implement marketing plans	January 2013 – September 2014
The 9th Chief Representative , Global Intelligence, Korea <ul style="list-style-type: none">Directed a volunteer group consisting of 69 college students to organize mentoring programs for teenagers	January 2012 – July 2013

**VOLUNTEER
EXPERIENCE**

Y-Zone Project in STEM Alliance, New York <i>Bilingual (Korean/English) Volunteer Translator</i>	October 2021 – Present
Major Mentoring Program in Yonsei University, Korea <i>Architecture-Major Mentor</i>	March 2019 – May 2021
Architecture School in Junglim Foundation, Korea <i>Architecture Tutor</i>	August 2018 – October 2018
Global Volunteering Program in Dongbu Foundation, Vietnam <i>Student Volunteer</i>	January 2017
Student Volunteer Group in Dongbu Foundation, Korea <i>Volunteer & Scholarship Holder</i>	February 2016 – February 2017
Global Engineering Program in Yonsei University, Indonesia <i>Student Volunteer & Assistant Manager</i>	August 2016
Seoul Junghwa Secondary School , Korea <i>Speech Tutor</i>	September 2012 – December 2012
Seoul Soongduck Primary School , Korea <i>Speech Tutor</i>	March 2012 – July 2013
Kyoto International School , Japan <i>Korean Tutor</i>	August 2012

REFERENCES

Available upon request.