Jihoon Chung, WELL AP, LEED GA

CONTACT INFORMATION	Center for Architecture Science and Ecology Rensselaer Polytechnic Institute New York, United States	*Tel:* +1 (347) 204-2049 *E-mail:* chungj11@rpi.edu https://j-chung.kr/

RESEARCH INTERESTS

Building Information Modeling / Internet of Things / Ontology
indoor environmental quality, building energy simulation, real-time monitoring system, interoperability, spatial network analysis, parametric design, machine learning, 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), GPA: 4.0/4.0, August 2021 – Current
- Advisor: Dr. Dennis Shelden

M.S., Architecture (Design Technology), GPA: 4.0/4.0, August 2021 – Current
- Advisor: Dr. Dennis Shelden

Graduate Certificates, January 2022 – Current
- Machine Learning & AI, Business Intelligence, and Systems Engineering

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

B.Arch, Architecture (5–year program), February 2019
- Thesis: "Haebang-ro: Relationship between Haebang-chon and Yongsan Park"
- Advisor: Moongyu Choi, AIA & KIRA

National University of Singapore, Singapore

Exchange Program for two semesters in AY2017

Gunmyungwon (건명원), Seoul, Korea

Future New School of Humanities, Arts & Science, February 2016

RESEARCH & WORK EXPERIENCE

Center for Architecture Science and Ecology, New York   **August 2021 – Current**
Research Assistant
- Developed a web-based monitoring system for indoor air quality based on BIM & IoT
- Proposed an ontology recommending a viable solution to improve indoor environmental quality for multiple occupants and reduce energy use in a room
- Taught and led an undergraduate group in a research-oriented class 'Research Investigation' in Fall semester 2022
- Served as a project mentor for undergraduates in an interdisciplinary project 'Smart Dormitory Devices and Development System' in Fall semester 2022 & Spring semester 2023

Saman Corporation, South Korea   **February 2021 – July 2021**
Researcher
- Planned 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 defesct 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   **March 2019 – June 2020**
Teaching Assistant
- 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   **May 2015 – August 2015**
Strategic Planning staff
- 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   **May 2014 – February 2015**
Sales Director & Co-founder
- 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   *(Submitted)* **Chung, J.**, Jacoby-Cooper, G., Rook, K., Henrique, S., Shelden, D., Kendall, E., and McGuinness, D. (2023) " Towards an Indoor Environmental Quality Management Ontology" *SWoCoT 2023: Workshop on Semantic Web of Constrained Things*

(Submitted) **Chung, J.**, Tsamis, A., and Shelden, D. (2023) " A framework for monitoring and identifying indoor air pollutants based on BIM with IoT sensors" *Proceedings of Computer-Aided Architectural Design. Interconnections: Co-computing beyond boundaries: 20th International Conference, CAAD Futures 2023*

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

Graduate Research Symposium (Podium Presentations), The 3rd Prize   **June 2022**
Rensselaer Polytechnic Institute, New York

Research Assistantship Award for 2021-2023 academic year   **August 2021**
Rensselaer Polytechnic Institute, New York

The 17th Outstanding Thesis Competition, Honorable Mention   **April 2021**
Architectural Institute of Korea, South Korea

2019 Yonsei Startup Lab Contest ($2,700), Best Startup Award   **July 2019**
Yonsei University, South Korea

2018 KICEM Annual Conference, Excellent Paper Award   **November 2018**
Korea Institute of Construction Engineering and Management, South Korea

Academic Scholarships for four semesters   **March 2016 – September 2018**
Yonsei University, South Korea

The 12th Architectural Engineering Competition, Excellent Award   **September 2016**
The Korean Structural Engineers Association, South Korea

Volunteer Full-Scholarship for two semesters   **March & September 2016**
Dongbu Foundation, South Korea

The 3rd Chung Juyung Startup Competition ($4,500), Excellent Startup Award   **August 2014**
The Asan Nanum Foundation, South Korea

The 18th National Boxing Competition for Non-Athlete, The 1st Prize   **August 2012**
Korea Boxing Institution, South Korea a

Chief Superintendent's Award for Leadership   **May 2011**
Seoul Metropolitan Office of Education, South Korea

PRESENTATIONS & WORKSHOPS	**Build an IoT monitoring system for your smart home** *Black Families Technology Awareness Day 2023, RPI [Workshop]*	**February 4, 2023**
	Air Quality Monitoring System based on BIM & IoT *EBESS Industry Workshop 'Well-being & Sustainability in the Built Environment', RPI [Poster]*	**November 2, 2022**
	Air Quality Monitoring System based on BIM & IoT *2022 Three Minute Thesis, RPI [Oral]*	**May 13, 2022**
	Air Quality Monitoring System based on BIM & IoT *2022 7th Annual Graduate Research Symposium, RPI [Poster, Oral – 3rd Place]*	**May 13, 2022**
	Build an IoT monitoring system for your smart home *Virtual Black Families Technology Awareness Day 2022, RPI [Workshop]*	**February 12, 2022**
	A Systematic Review of 3D Concrete Printers from 1997 to 2020 *37th International Symposium on Automation and Robotics in Construction (ISARC) [Oral]*	**October 28, 2022**
	Performance Evaluation Criteria for Building 3D Printing *2018 Annual Conference of KICEM [Oral]*	**November 30, 2018**

CERTIFICATIONS	**WELL AP** *International WELL Building Institute (IWBI)*	**February 6, 2023**
	LEED Green Associate *U.S. Green Building Council*	**August 13, 2022**
	2020 AI Technical Development Workshop (Image/Video Recognition) *Korea Electric Power Corporation (KEPCO)*	**August 7, 2020**
	The 9th Image Recognition Application Workshop *Fast Campus (패스트캠퍼스)*	**October 19, 2019**
	The 3rd Object Detection Application Workshop *Fast Campus (패스트캠퍼스)*	**September 7, 2019**
	DA BIM Specialist Intermediate Workshop *DAGROUP Urban Design & Architecture Co., Ltd*	**July 14, 2019**
	2018 BIGDATA X CAMPUS (Python-based Big Data Analysis) *Korea Data Agency*	**June 14, 2018**

SKILLS	**Programming Languages:** Python, JAVA, C#, C++, Javascript (Node.js, Three.js, Express.js, Node-RED), P5 Processing, SPARQL, SQL
	CAD/CAE: Rhino(+Grasshopper, Ladybug, Honeybee, Butterfly), Revit(+Dynamo, Butterfly), Sketchup, CATIA, AutoCAD, Midas Civil
	Design tools: Adobe Photoshop, Illustrator, InDesign, Premiere Pro, Experience Design
	Machining: Arduino, Raspberry Pi, 3D printer, Laser Cutter
	Others: EnergyPlus, Tensorflow(+Keras), Pytorch, SPSS, Protégé

LEADERSHIP EXPERIENCES	**Project leader**, Social Algorithm 7.0 Workshop	**August 2020**

- Led a team project in an international online-workshop organized by Social Algorithm Research Group
- Analyzed spatial network using Rhino + Grasshopper with Python, and conducted on-site surveys for the validation
- Based on the analysis result, submitted a journal article to *Journal of the Urban Design Institute of Korea*

Casting Director & Co-founder, We Ask, Korea   **January 2013 – September 2014**

- Co-founded a conference-planning organization called '젊음이묻습니다', gathering 100+ NGO-interested students
- Invited 30+ celebrities to have talks with students, such as Im Kwon-taek, Ko Un, Kim Jung-man, and so on
- Got sponsorships from publishers, theatres, and student councils to implement marketing plans

The 9th Chief Representative, Global Intelligence, Korea   **January 2012 – July 2013**

- Directed a volunteer group consisting of 69 college students to organize mentoring programs for teenagers

VOLUNTEER EXPERIENCE	**First East Brooklyn High School & Code Nation**, New York *Programming Tutor*	**September 2022 – Current**

Y-Zone Project in STEM Alliance, New York   **October 2021 – September 2022**
Bilingual (Korean/English) Volunteer Translator

Major Mentoring Program in Yonsei University**,** Korea   **March 2019 – May 2021**
Architecture-Major Mentor

Architecture School in Junglim Foundation, Korea   **August 2018 – October 2018**
Architecture Tutor

Global Volunteering Program in Dongbu Foundation, Vietnam   **January 2017**
Student Volunteer

Student Volunteer Group in Dongbu Foundation, Korea   **February 2016 – February 2017**
Volunteer & Scholarship Holder

Global Engineering Program in Yonsei University, Indonesia   **August 2016**
Student Volunteer & Assistant Manager

Seoul Junghwa Secondary School, Korea   **September 2012 – December 2012**
Speech Tutor

Seoul Soongduck Primary School, Korea   **March 2012 – July 2013**
Speech Tutor

Kyoto International School, Japan   **August 2012**
Korean Tutor

REFERENCES	Available upon request.