

# YOUNGSIK CHOI

[youngsik-choi.github.io](https://youngsik-choi.github.io)

(Updated on Apr. 14, 2023)

## EDUCATION

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<b>PhD</b>	<b>Texas A&amp;M University</b> , Mechanical Engineering - <i>Building Energy &amp; HVAC</i> Advisor: Prof. Zheng O'Neill	May. 2022 –
<b>MS</b>	<b>Seoul National University</b> , Architectural Engineering - <i>Building Simulation</i> Advisor: Prof. Cheol-Soo Park Thesis: 'Stochastic Setpoint Temperature Learning for Occupant Behavior-based Control'	Mar. 2020 – Feb. 2022
<b>BS</b>	<b>Seoul National University</b> , Architectural Engineering 2-year absence to fulfill mandatory military service (Aug. 2016 – Jul. 2018)	Mar. 2014 – Feb. 2020
	<b>Peking University</b> , College of Engineering International Exchange Student (Summer session offered in English)	Jul. 2016

## FIELDS OF INTEREST

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Building Simulation, EnergyPlus Modeling, Building HVAC Control, Machine Learning, Occupant Behavior

## EXPERIENCE

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<b>Research Assistant</b> , Texas A&M University	May. 2022 –
<b>Research Assistant</b> , Seoul National University	Mar. 2020 – Feb. 2022
<b>Teaching Assistant</b> , Seoul National University <ul style="list-style-type: none"><li>400.418 Creative Engineering Design</li></ul>	Sep. 2020 – Feb. 2021

## PROJECTS

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<b>High-performance Whole Building Design 3D-printed Carbon-Absorbing Funicular Structures</b> DOE ARPA-E HESTIA, @ Texas A&M University <ul style="list-style-type: none"><li>Developing EnergyPlus Model for radiant systems for buildings with 3D-printed carbon-absorbing funicular structures.</li><li>Exploring direct carbon capturing potential using HVAC system.</li><li>Investigating operational carbon emission reduction calculation.</li></ul>	Jan. 2023 –
<b>Optimizing Supply Air Temperature Control for Dedicated Outdoor Air Systems</b> ASHRAE 1865, @ Texas A&M University <ul style="list-style-type: none"><li>Developing EnergyPlus model for DOAS with heat pumps, fan coils, and chilled beams.</li><li>Developing optimization-informed rule extraction framework for DOAS supply air temperature control.</li></ul>	May. 2022 –
<b>Development of Building Energy Management System Algorithms</b> Hyundai Development Company (HDC) I-Controls, @ Seoul National University <ul style="list-style-type: none"><li>Developed machine learning-based indoor air temperature and electricity prediction models for an existing office building.</li></ul>	Jun. 2020 – Feb. 2021

**Development of Real-time Diagnosis Technology of Home Energy Usage and Smart & Autonomous Control/Management System**

Jan. 2020 – Feb. 2022

Korean Energy Technology Evaluation and Planning (KETEP), @ Seoul National University

- Explored machine learning-based indoor air and setpoint temperature prediction models for existing residential buildings.

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**HONORS AND AWARDS**

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**An AI for IoT Information (AI3) Prize Competition**

Feb. 2023

Phase 1 winner, Won \$10,000 as a team (the only student team)

<https://www.us-ignite.org/program/challenge-competitions/nist-iot-competition/>

**Emil Buehler Aerodynamic Analo Fellowship**

Aug. 14, 2022

Fellowship, J. Mike Walker '66 Department of Mechanical Engineering, Texas A&M University

**Outstanding Paper Award (co-author)**

Apr. 29, 2022

The 2022 Spring Annual Conference of the Architectural Institute of Korea

**Poster Session Award Winner (runner-up)**

Dec. 14, 2020

The 2020 Winter Simulation Conference

**Organization Scholarship**

Sep. 2020 – Feb. 2022

Full tuition, The Education and Research Foundation of Seoul National University

**Eminence Scholarship**

Mar. 2016 – Feb. 2020

Full tuition, Seoul National University

**Certificate of Appreciation**

May. 3, 2018

2018 Key Resolve R.O.K & U.S. Joint Exercise (Took charge of translation)

**Organization Scholarship**

Sep. 2015 – Feb. 2016

Full tuition, Moon-Ju Scholarship Foundation

**Merit-based Scholarship**

Mar. 2015 – Aug. 2015

Partial tuition (40%), Seoul National University

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**JOURNAL PAPERS**

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**Y. Choi, X. Lu, Z. O'Neill, F. Feng, T. Yang.** (2023), Optimization-informed Rule Extraction for HVAC system: A Case Study of Dedicated Outdoor Air System (DOAS) Control. Submitted to *Energy and Buildings*.

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**CONFERENCE PROCEEDINGS**

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**Y. Choi, X. Lu, Z. O'Neill, Z. Pang** (2023), Modeling and Simulation of Dedicated Outdoor Air System (DOAS) with a Passive Desiccant Wheel: A Case Study using EnergyPlus. Submitted to *ASHRAE Annual Conference 2023*, Tampa, USA.

**Y. Choi, X. Lu, Z. O'Neill, F. Feng** (2023), Optimal Supply Air Temperature Control for Dedicated Outdoor Air System Under Varying Climate Zones. Submitted to *Building Simulation Conference 2023*, Shanghai, China.

**Choi, Y., Shin, H.S., Cho, S., Ko, Y.D. and Park, C.S.** (2020), Predictive Uncertainty of Residential Building Energy Model, Proceedings of the 2020 Winter Simulation Conference, Dec. 14-18, Orlando, USA (Virtual Conference). (*Best Poster Award*)

**Choi, Y., Yi, D.H., Shin, H., Chu, H.G., Yoo, S. and Park, C.S. (2020),** Application of transfer learning to a simulation model for room air temperature, Proceeding of Annual Conference of the Architectural Institute of Korea, Vol. 40-2, pp. 386-387, Oct. 26-30, Yeosu, Republic of Korea (Virtual Conference).

**Choi, Y., Shin, H., Ko, Y., Cho, S. and Park, C.S. (2020),** Predictive uncertainty of energy simulation model using Deep Ensembles, Proceeding of Annual Conference of the Architectural Institute of Korea, Vol. 40-1, pp. 290-291, Apr. 24, Seoul, Republic of Korea.

## **TECHNICAL SKILLS**

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**Building Simulation:** EnergyPlus modeling, Optimization, Machine learning

**Programming:** Python, Visual Basic, Arduino

## **OTHER EXPERIENCE**

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### **Hyundai Engineering and Construction**

Dec. 2018 – Feb. 2019

- Worksite manager

### **Republic of Korea Naval Mobile Construction Squadron**

May. 2017 – Jul. 2018

- Construction engineer & translator (mandatory military service)

### **Republic of Korea Naval Academy**

Oct. 2016 – Apr. 2017

- Building facility manager (mandatory military service)