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RESEARCH INTERESTS

- Extended Reality [J3, J7, J8, J9, J10, U5]
 - Exploring the adoption of eXtended Reality (XR) – including Virtual, Augmented, and Mixed Reality – to assess the impact of indoor space design on occupants' responses. Utilizing both self-report and physiological (EEG, HRV) data to quantify the relationship between space and occupant.
- Artificial Intelligence
 - Natural language processing, image processing, and transformer models
- Project Management [J5, J6, U1, U2, U3, U6]
 - Analyzing stochastic management data in construction projects, characterized by their temporary nature, diverse stakeholders, and labor-intensive processes, by implementing machine learning algorithms to interpret complex interconnections.

EDUCATIONS

Ph.D. Hanyang University	2026
Department of Architectural Engineering	
<i>Dissertation title: "A User-Centered Spatial Design Revision Framework using Affective Engineering and Transformer-based Emotional Requirement Interpretation"</i>	
M.S. Hanyang University	2022
Department of Architectural Engineering	
B.S. Hanyang University	2020
Department of Interior Architecture Design	

EXPERIENCES

Teaching Fellow , Hanyang University	2024–2026
Department of Architectural Engineering	
<i>Computer Engineering</i>	Spring 2026
<i>Architectural Engineering Capstone PBL</i>	Fall 2025
<i>Computer Engineering</i>	Spring 2025
<i>Computer Engineering</i>	Spring 2024
Internship , SIFC Property Korea YH	2019–2020
- Property management for IFC Seoul, including a IFC Mall ($85,444m^2$ GFA), three IFC Seoul Office Towers ($329,586m^2$ GFA), and Conrad Seoul Hotel (five-star hotel)	
Undergraduate Research Student , Hanyang University	2019
Hanyang University, Department of Interior Architecture Design	

RESEARCH PROJECTS

Hanyang University, Department of Architectural Engineering	2021–2026
<i>Research Manager, extended reality and occupant behavior</i>	
• <i>Study on Quality Control of Educational Facilities using Virtual Environments.</i>	2023–2024
• <i>Development of Decision-making Framework to Support Personalized Spatial Composition based on Temperament, Perception and Bio-markers Applying Digital Twin.</i>	2021–2024
<i>Research Participant, construction management and on-site quality control</i>	
• <i>Development of Artificial Intelligence-based Real-Time Construction Quality Management System.</i>	2024–2026
• <i>Construction Quality Control using Digital Twin Technology.</i>	2021–2022
• <i>Establishment of Standard Guidelines for Daycare Centers in Police Stations.</i>	2021
Hanyang University, Department of Interior Architecture Design	2019
<i>Research Student, data collection and analysis</i>	
• <i>Spatial Preference Modeling based on Immersive Virtual Environment and Choice Modeling Theory.</i>	2019

INTERNATIONAL PUBLICATIONS

- REFERRED JOURNALS
- [J10] **Im, J. B.**, Hong, R. L., Joo, M., Zhang, E., & Kim, J. H.* (2025). Visual Fidelity Effects on Occupants' Performance, Mental States, and Emotions in Mixed Reality Environments. *Architectural Science Review*, Taylor & Francis, (Accepted). (<https://doi.org/10.1080/00038628.2025.2584180>) [A&HCI, Q1, 2.5%, IF 1.8]
- [J9] Lee, K. T., **Im, J. B.**, & Kim, J. H.* (2025). Effects of Human Perception Dimensions Constituting Individual Temperament and Experience on Indoor Space Composition Decision-making Presented in a Mixed-reality Environment. *Architectural Science Review*, Taylor & Francis, 1–16. (<https://doi.org/10.1080/00038628.2025.2510300>) [A&HCI, Q1, 2.5%, IF 1.8]
- [J8] Joo, M., **Im, J. B.**, Lee, K. T., & Kim, J. H.* (2025). Comparative Analysis of Work Performance and Physiological Response Based on Office Types and Indoor Space Design. *Architectural Engineering and Design Management*, Taylor & Francis, 1–17. (<https://doi.org/10.1080/17452007.2025.2490958>) [SCIE, Q2, 34.3%, IF 2.7]
- [J7] **Im, J. B.**, Joo, M., Lee, K. T., & Kim, J. H.* (2025). A mixed reality approach to identify cognitive performance and mental states in preferred vs. non-preferred individual and collaborative work environments. *Building and Environment*, Elsevier, 274, 112806. (<https://doi.org/10.1016/j.buildenv.2025.112806>) [SCIE, Q1, 4.1%, IF 7.1]
- [J6] Park, S. J., **Im, J. B.**, Yoon, H. S., & Kim, J. H.* (2025). Data Augmentation Approaches for Estimating Curtain Wall Construction Duration in High-Rise Buildings. *Buildings*, MDPI, 15(4), 583. (<https://doi.org/10.3390/buildings15040583>) [SCIE, Q2, 27.7%, IF 3.1]
- [J5] Kim, H. J., Kim, J. H.* , & **Im, J. B.*** (2023). Forecasting offline retail sales in the COVID-19 pandemic period: A case study of a complex shopping mall in South Korea. *Buildings*, MDPI, 13(3), 627. (Co-Corresponding Author) (<https://doi.org/10.3390/buildings13030627>) [SCIE, Q2, 40.4%, IF 3.3]
- [J4] Lee, K. T., **Im, J. B.**, Park, S. J., & Kim, J. H.* (2023). Identifying improvements priorities in daycare centre space performance from teachers' perspectives: application of importance–performance analysis and structural equation modelling. *Engineering, Construction and Architectural Management*, Emerald, 32(1), 639–672. (<https://doi.org/10.1108/ECAM-08-2022-0777>) [SCIE, Q1, 22.3%, IF 3.6]
- [J3] Lee, K. T., **Im, J. B.**, Park, S. J., & Kim, J. H.* (2022). Conceptual framework to support personalized indoor space design decision-making: A systematic literature review. *Buildings*, MDPI, 12(6), 716. (<https://doi.org/10.3390/buildings12060716>) [SCIE, Q2, 44.1%, IF 2.6]
- [J2] Park, S. J., Lee, K. T., **Im, J. B.**, & Kim, J. H.* (2022). The need for smart architecture caused by the impact of COVID-19 upon architecture and city: A systematic literature review. *Sustainability*, MDPI, 14(13), 7900. (<https://doi.org/10.3390/su14137900>) [SCIE, Q2, 45.0%, IF 3.2]

- [J1] Nindartin, A., Moon, H. W., Park, S. J., Lee, K. T., **Im, J. B.***, & Kim, J. H.* (2022). Influencing of the Building Energy Policies upon the Efficiency of Energy Consumption: The Case of Courthouse Buildings in South Korea. *Energies*, MDPI, 15(18), 6679. (Co-Corresponding Author) (<https://doi.org/10.3390/en15186679>) [SCIE, Q3, 60.9%, IF 3.0]

- UNDER REVIEW

- [U7] **Im, J. B.**†, Ahn, C.†, Lee, S. Y., Yoo, Y., & Kim, J. H.* (2025). Techno-Economic Feasibility of e-Methanol System fueled by CO₂ and Green Hydrogen with Policy Pathways to Competitiveness. *Energy Policy*, Elsevier, (Co-First Author) (*Under Review*).
- [U6] Lee, K. T., **Im, J. B.**, Hong, R. L., & Kim, J. H.* (2025). Enhancing Retrieval-Augmented Generation Performance through Network Analysis of Question Types in Public Procurement Law. *Journal of Management in Engineering*, ASCE, (*Under Review*).
- [U5] **Im, J. B.**, Lee, K. T. & Kim, J. H.* (2025). Effects of Visualization Quality on Occupant Responses in Immersive Design Review Environments. *Developments in the Built Environment*, Elsevier, (*Under Review*).
- [U4] Ochirsuren, N., Kye, Y. S., **Im, J. B.**, Zhang, E., & Lee, K. T., Kim, J. H.* (2025). Effect of Changing Sequence in Semi-Top-Down Construction Works to Optimize Time and Cost: A Case Study on Korean Apartment Projects, *Engineering, Construction and Architectural Management*, Emerald, (*Under Review*).
- [U3] Shin, S. H., **Im, J. B.**, Choi, H., Kim, J. H., & Lee, K. T.* (2025). AI-Based Approach to International Market Selection Models Considering Construction Factors: A Case Study of Indian Firms, *Journal of Civil Engineering and Management*, Vilnius Tech. Press, (*Under Review*).
- [U2] Hong, R. L., **Im, J. B.**, Kang, H. G., & Kim, J. H.* (2025). Prediction of structural frame works safety and health management expenses in apartment construction projects by introducing interpretable machine learning, *Engineering, Construction, and Architectural Management*, Emerald, (*Under Review*).
- [U1] Hong, R. L., Yoon, J. H., **Im, J. B.**, & Kim, J. H.* (2025). Prediction of Actual Safety and Health Management Expenses for Water Supply System Construction Projects in Korea through Machine Learning. *Journal of Civil Engineering and Management*, Vilnius Tech. Press, (*Under Review*).

- REFERRED CONFERENCES

- [C5] Zhang, E., Choi, S. W., **Im, J. B.**, Baek, Y. G., Kim, J. H., & Lee, K. T.* (2025)., Study of construction dispute resolution strategies centered on two-level game theory, *the 11th International Conference on Construction Engineering and Project Management (ICCEPM 2025)*, Jeju, South Korea, 17–20 November, 2025.
- [C4] Ochirsuren, N., Kim, G. T., **Im, J. B.**, Hong, R. L., Xu, L., & Kim, J. H.* (2025). A BPMN-based Framework for Real-time Rebar Arrangement Inspection on Construction Sites, *the 11th International Conference on Construction Engineering and Project Management (ICCEPM 2025)*, Jeju, South Korea, 17–20 November, 2025.
- [C3] Hong, R. L., **Im, J. B.**, Zhang, E., Park, S. J., Ochirsuren, N., Beak, Y. G., Kang, S. H., Wang, S., Lee, C. S., Cheong, S. W., & Kim, J. H.* (2025). Development of a Petrochemical Plant Pipe Counting Method Based on Improved Mask R-CNN and Transformer. *the 42nd International Symposium of Automation and Robotics in Construction (ISARC 2025)*, pages 972–979, Montreal, Canada, 28–31 July, 2025. (<https://doi.org/10.22260/ISARC2025/0126>)
- [C2] **Im, J. B.**, Hong, R.L., Jang, J. H., Zhang, E., Shin, S. H., Joo, M., Lee, K. W., Lee, K. M., Lee, K. H., Park, S. Y., & Kim, J. H.* (2025). Effects of Visual Fidelity on Task Performance and Mental Workload in IVEs. *the 42nd International Symposium of Automation and Robotics in Construction (ISARC 2025)*, pages 909–916, Montreal, Canada, 28–31 July, 2025. (<https://doi.org/10.22260/ISARC2025/0118>) (Presenter)
- [C1] Jang, J. H., **Im, J. B.***, Zhang, E. L., Joo, M. B., Kang, S. H., & Kim, J. H.* (2024). A Framework for Assessing the Learning Performance and Creativity in Spatial Features by Immersive Virtual Environments. *the 10th International Conference on Construction Engineering and Project Management (ICCEPM 2024)*, pages 621–628, Sapporo, Japan, 29 July – 1 August, 2024. (<https://doi.org/10.6106/ICCEPM.2024.0621>) (Presenter)

DOMESTIC PUBLICATIONS

- REFERRED JOURNALS

- [5] Zhang E. L., Jo, S. H., **Im, J. B.**, & Kim, J. H.* (2024). Importance and Performance Analysis on Stakeholders Perceptions against Public Rental Housing Status and Directions to Improve Occupants Satisfaction. *Journal of the Architectural Institute of Korea*, 41(1), 301–312. (<https://doi.org/10.5659/JAIK.2025.41.1.301>) [Scopus]

- [4] Lee, K. Y., Ding, Z. S., **Im, J. B.**, Park, S. J., & Kim, J. H.* (2024). Investigation of Construction Duration Influence Factors and Comparison of Artificial Intelligence Methods for Estimating Appropriate Construction Duration in Public Sewerage Construction. *Korea Institute of Construction Engineering and Management*, 25(6), 66–74. (<https://dx.doi.org/10.6106/KJCEM.2024.25.6.066>) [KCI]
- [3] Kim, D. H., Ye, S. J., Lee, K. T., **Im, J. B.**, & Kim, J. H.* (2023). Developing a Comprehensive Framework for Detailed Facility Planning in Office Building Grade Assessment. *Journal of the Architectural Institute of Korea*, 39(9), 69–80. (<https://doi.org/10.5659/JAIK.2023.39.9.69>) [Scopus]
- [2] **Im, J. B.**, Hwang, S. J., Jang, J. H., Kim, J. H., & Lee, K. T.* (2022). Introduction of mixed reality on special tree landscape design review phase. *Journal of the Architectural Institute of Korea*, 38(8), 71–81. (<https://doi.org/10.5659/JAIK.2022.38.8.71>) [Scopus]
- [1] Kim, H. S., **Im, J. B.**, Lee, K. T., Kim, H. J., & Kim, J. H.* (2021). Proposals for Feasibility Study and Optimal Combination of Renewable Energy Generation Systems in Baengnyeongdo and Oedo using HOMER. *Journal of the Architectural Institute of Korea*, 37(12), 347–356. (<https://doi.org/10.5659/JAIK.2021.37.12.347>) [Scopus]
- REFERRED CONFERENCES
- [5] Kim, D. H., Ye, S. J., **Im, J. B.**, & Kim, J. H.* (2023). Developing a Comprehensive framework for Detailed Facility Planning in Office Building Grade Assessment. *Spring Annual Conference of AIK*, pages 769–772.
- [4] **Im, J. B.**, Ding, Z. S., & Kim, J. H.* (2023). A Case Study of Complex Shopping Mall on Factors Relevant to COVID-19 Affecting Offline Retail Sales, *Spring Annual Conference of AIK*, pages 735–736.
- [3] Lee, K. T., **Im, J. B.**, Ding, Z. S., Hong, R. L., & Kim, J. H.* (2022). An Analysis of User's Emotions and Task Performance in Indoor Space Implemented by Mixed-Reality, *Autumn Annual Conference of AIK*, pages 1051–1054.
- [2] Park, S. J., Lee, K. T., **Im, J. B.**, & Kim, J. H.* (2022). Design of Experiments for Voxel Down-sampling Indoor Point Cloud Data, *Autumn Annual Conference of AIK*, pages 1082–1085.
- [1] **Im, J. B.**, Lee, K. T., Kim, H. J., Nindartin, A., Nour, N., & Kim, J. H.* (2022). Forecasting of Offline Complex Shopping Mall Retail Sales after COVID-19 pandemic, *Autumn Annual Conference of AIK*, pages 1060–1061.

PATENTS

- South Korea Patent, No. 10-2421360, “System for Generating 3D LiDAR Scanning Position.”
July 12, 2022.

REFERENCES

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