# Biographical Sketch Kim, SeongYong

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### (a) **Professional Preparation**

Seoul National University, South Korea; Architectural Engineering; B.S., 2017 Seoul National University, South Korea; Civil and Environmental Engineering; M.S., 2019 Georgia Institute of Technology, Atlanta, GA; Computer Science–[Perception and Robotics]; M.S., 2024 Georgia Institute of Technology, Atlanta, GA; Civil Engineering; Ph.D. Student, 2021–present

# (b) Appointments

2019–2021: Startup Entrepreneur, GIS-Focused Early-Stage Ventures, South Korea.

# (c) **Products**

#### **Journal Publications**

- [J1] Kim, Y., Kim, S., Chen, Y., Yang, H., Kim, S., Ha, S., Gombolay, M., Ahn, Y. and Cho, Y.K., 2024. Understanding human-robot proxemic norms in construction: How do humans navigate around robots?. *Automation in Construction*, 164, p.105455.
- [J2] Kim, S., Park, S., Kim, H. and Yu, K., 2021. Deep floor plan analysis for complicated drawings based on style transfer. *Journal of Computing in Civil Engineering*, *35*(2), p.04020066.
- [J3] Kim, H., Kim, S. and Yu, K., 2021. Automatic extraction of indoor spatial information from floor plan image: A patch-based deep learning methodology application on large-scale complex buildings. *ISPRS International Journal of Geo-Information*, 10(12), p.828.

#### **Conference Proceedings**

- [C1] Kim, S. and Cho, Y.K., 2025. Towards Robust 3D Segmentation in Construction: Tackling Raw and Incomplete Scans. *SCE International Conference on Computing in Civil Engineering 2025*.
- [C2] Kim, Y., Chen, Y., Kim, S. and Cho, Y.K., 2024. How Much Distance Should Robots Keep from Other Workers at Construction Jobsites?. In *Construction Research Congress 2024* (pp. 893-902).
- [C3] Kim, S., Kim, Y. and Cho, Y.K., Construction Scene Segmentation Using 3D Point Clouds: A Dataset and Challenges. In *Construction Research Congress 2024* (pp. 378-385).
- [C4] Chen, Y., Kim, S., Ahn, Y. and Cho, Y.K., 2023. A Framework of Reconstructing Piping Systems on Class imbalanced 3D Point Cloud Data from Construction Sites. In *ISARC. Proceedings of the International Symposium on Automation and Robotics in Construction* (Vol. 40, pp. 426-433). IAARC Publications.
- [C5] Kim, S., Yajima, Y., Park, J., Chen, J. and Cho, Y.K., 2022. A hybrid semantic-geometric approach for clutter-resistant floorplan generation from building point clouds. *In 9th International Conference on Construction Engineering and Project* (pp. 378-385).
- [C6] Kim, Y., Kim, S., Yajima, Y., Irizarry, J. and Cho, Y.K., 2022. Development of Framework for Highway Lawn Condition Monitoring using UAV Images. In *ISARC. Proceedings of the International Symposium on Automation and Robotics in Construction (Vol. 39, pp. 444-450).* IAARC Publications.

- [C7] Kahoush, M., Yajima, Y., Kim, S., Chen, J., Park, J., Kangisser, S., Irizarry, J. and Cho, Y.K., 2022. Analysis of flight parameters on UAV semantic segmentation performance for highway infrastructure monitoring. ASCE International Conference on Computing in Civil Engineering 2021 (pp. 885-893).
- [C8] Yajima, Y., Kahoush, M., Kim, S., Chen, J., Park, J., Kangisser, S., Irizarry, J. and Cho, Y.K., 2021. Ai-driven 3d point cloud-based highway infrastructure monitoring system using UAV. ASCE International Conference on Computing in Civil Engineering 2021 (pp. 894-901).
- [C9] Kim, S., Park, S. and Yu, K., 2018. Application of style transfer in the vectorization process of floorplans (short paper). In 10th International Conference on Geographic Information Science (GIScience 2018) (pp. 39-1). Schloss Dagstuhl–Leibniz-Zentrum für Informatik.
- [C10] Kim, S., Park, S. and Yu, K., 2018, Proposal for a method of extracting road layers from remote sensing images using conditional GANs. In Proceedings of *the 2nd International Conference on Digital Signal Processing* (pp. 84-87).
- [C11] Park, S., Kim, S. and Yu, K., 2018, Designing of indoor linkable pedestrian network data model for the transportation vulnerable. In Proceedings of *the 2nd International Conference on Digital Signal Processing* (pp. 57-60).
- [C12] Park, S., Kim, S.Y., and Yu, K., 2018, A study on generation methodology of an indoor network using building evaluation map. 2018. *International Multidisciplinary Scientific GeoConference:* SGEM, 18(2.2), pp.11-17.

#### **Technical Posters**

- [P1] Kim, P., Kim, S. and Cho, Y., 2025. Let the Robot Decide: Adaptive Scan Planning in cluttered and Unknown Terrains. *IEEE International Conference on Robotics and Automation (ICRA)*
- [P2] Kim, S. and Cho, Y., 2024. Reality Capture in Construction Sites: A Study on Point Sampling for 3D Point Cloud Segmentation. ASCE International Conference on Computing in Civil Engineering (i3CE)
- [P3] Cho, Y., Kurtis, K., Gentry, R., Brown, J., Kim, S. and Lee, S. 2024. RP 22-21: Phase III Investigation and Guidelines for Best Practices of Mass Concrete Construction Management. 12th Annual Transportation Research Expo. Georgia Department of Transportation.
- [P4] Irizarry, J., Cho, Y., Yajima, Y., Kim, S. and Kangisser, S., 2021. RP 20-09: Development of Highway Mowing Operations, Monitoring, and Verification using UAVs. 9th Annual Transportation Research Expo. Georgia Department of Transportation.

#### **Workshop Presentations**

- [W1] Chen, J., Cho, Y., Kim, S. and Park, J., 2024. Deep Learning Tools for Understanding and Modeling the Built Environment. *ASCE International Conference on Computing in Civil Engineering* (*i3CE*)
- [W2] Chen, J., Park, J., Yajima, Y., and Kim, S., 2021. 2D floorplan reconstruction for the Scan-to-BIM Challenge on Computer Vision in the Built Environment. Presented at the *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)* workshop; awarded 2nd place in the challenge.

#### Patents

[T1] Kim, H., Yu, K. and Kim, S., 2023, Automatic extraction method of indoor spatial information from floor plan images through patch-based deep learning algorithms and device thereof, KR patent, 10-2535054, 2023/5/17. [T2] Yu, K., Im, J. Kim S., and Kim J., 2019, Method for location identification using volunteered geographic information, KR patent, 10-2053235, 2019/12/2.

## (d) Synergistic Activities

- 1. Awards: (i) Selected as 2023–2024 CEE Future Faculty Fellow at Georgia Tech (\$1,000 award) (ii) Runner-up for Best Paper Award at ASCE i3CE 2024. (iii) 2nd place in Scan-to-BIM Challenge at CVPR 2021.
- 2. Teaching and mentoring: (i) Delivered guest lectures in graduate courses on Construction Simulation, UAV Applications, LiDAR Sensing, and Scan-to-BIM Processes. (ii) Served as a TA for courses including: Construction Industry Best Practices (CEE 6125 / 8813-I), Construction Equipment and Methods (CEE 8813-A), Construction Automation (CEE 6185 / 8813-L), Construction Operation (CEE 4120), during Fall 2022 to Spring 2025 at Georgia Tech.
- 3. GIS and entrepreneurial activities: (i) Proposed and led a government-funded startup project on recommending optimal business locations for new market owners; Received \$50,000 in funding through Korea's New Founder Startup Package, supported by the Ministry of SMEs and Startups. (ii) Provided GIS-based consulting on site allocation for Samsung Training Center; funded \$1,850 by Samsung Economic Research Institute.
- 4. Academic community service: (i) Reviewer for peer-reviewed journals and conferences, including Automation in Construction, Developments in the Built Environment, and the proceedings of the International Symposium on Automation and Robotics in Construction (ISARC). (ii) Volunteer for the IEEE International Conference on Robotics and Automation (ICRA), 2025.
- **5. Outreach:** Participated in Georgia Tech's Robotics Open House Lab Demo (April 2025), engaging K-12 students and community members through lab tours and demonstrations.