Yilong Chen

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Research interests: Construction Automation, SLAM, BIM, Robotics Simulation, CG, AI

Education Background

2022/05- present	**Georgia Institute of Technology**	Atlanta, USA
	Ph.D. student in Construction Engineering, minor in Robotics, RICAL	
	M.S. in Computational Science and Engineering	
2021/09-2025/12	**The University of Texas at Austin**	Austin, USA
	M.S. in Computer Science	
2016/09-2018/08	**The University of Tokyo**	Tokyo, Japan
	M.S. in Environmental Studies	
2011/09-2016/07	**Zhejiang University**	Hangzhou, China
	B.Eng. in Civil Engineering	
2014/10-2015/08	Hokkaido University	Sapporo, Japan

Publications

[1] **Yilong Chen**, Yong K Cho, "Online Dynamic Object Detection and Tracking in Construction using LiDAR SLAM," *Journal of Computing in Civil Eningeering*, 2025. **Under Review**

[2] **Yilong Chen**, Yu Du, Xiaoke Zhang, Yong K Cho, "An Observation Feature Study of Robot Imitation Learning for Autonomous Social Navigation on Construction Sites," *2025 International Conference on Computing in Civil Engineering (i3CE)*, 2025. **Accepted**

[3] **Yilong Chen**, YeSeul Kim, Yarovoi Andrew, Seongyong Kim, Yong K Cho, "Online Dynamic Object Detection on Construction Sites using SLAM and Occupancy Grids," *Proceedings of the ASCE 2024 International Conference on Computing in Civil Engineering (i3CE)*, 2024. **Best Paper Award: 2nd Runner-Up**

[4] **Yilong Chen**, Seongyong Kim, Yonghan Ahn, Yong K Cho, "A Framework of Reconstructing Piping Systems on Classimbalanced 3D Point Cloud Data from Construction Sites," *ISARC. Proceedings of the International Symposium on Automation and Robotics in Construction*, 2023.

[5] **Yilong Chen**, Tsuyoshi Seike, Yongsun Kim, Maito Shimura, "Study on Simple Methods to Improve Housing Insulation Performance," *Summaries of Technical Papers of Annual Meeting of AIJ*, 2018.

[6] Jinhee Yu, Monika Jayakumar, **Yilong Chen**, Yong Cho, Jingdao Chen, "Self-supervised Learning with LiDAR-Camera Fusion for Construction Site Traversability Estimation," *2025 International Conference on Computing in Civil Engineering (i3CE)*, 2025. **Accepted**

[7] Yarovoi Andrew, Pengyu Mo, **Yilong Chen**, Yong K Cho, "Lightweight Organized LiDAR (LOL) SLAM For Complex and Dynamic Environments," *Journal of Computing in Civil Engineering*, 2025. **Under Review**

[8] Yeseul Kim, **Yilong Chen**, Matthew Gombolay, Yong K Cho, "Understanding the Effects of Humanlike Robot Motions on Unfocused Human-Robot Interaction," *Advanced Engineering Informatics*, 2025. **Under Review**

[9] YeSeul Kim, Seongyong Kim, **Yilong Chen**, HyunJin Yang, Seungwoo Kim, Sehoon Ha, Matthew Gombolay, Yonghan Ahn, Yong Kwon Cho, "Understanding human-robot proxemic norms in construction: How do humans navigate around robots?," *Automation in Construction*, 2024.

[10] YeSeul Kim, **Yilong Chen**, Seongyong Kim, Yong K Cho, "How Much Distance Should Robots Keep from Other Workers at Construction Jobsites?," *Construction Research Congress 2024*, 2024.

[11] Yilan Zhou, Qing Wu, Xingling Xu, Shuaizhong Wang, **Yilong Chen**, "To the Harmony of Architectural and Structural Design: Interview of Junya ISHIGAMI and Jun SATO Working in Cooperation," *The Architect*, 2021.

[12] Sheng Bao, **Yilong Chen**, Yibin Gu, Yangjie Lin, "A Primary Frame of Facility Management Based on BIM," *City & House*, 2018.

Work & Internship

2022/08- present **Teaching Assistant, *Georgia Institute of Technology*** Atlanta, USA

- Works as a teaching assistant for CS7632 Game AI since Fall 2022, holding office hours for programming projects including computational geometry, path planning, projectiles, finite state machine, fuzzy logic, procedural content generation
- Teaches as a guest lecturer for CEE6185 Construction Automation since Fall 2024, introducing to graduate students topics such as kinematics, 3D reconstruction, AI & ML, object recognition, Scan-to-BIM, mobile robots & SLAM

2020/01-2024/07 **BIM System Development, *Applied Technologies*** Tokyo, Japan

- Worked as a core member of a Revit secondary development project including functions such as exporting spatial data for construction robotics tool, drawing support tool, and plan layout tool for *Daiwa House*, the largest homebuilder in Japan
- Took charge of the integration of a geometry calculation, finishing accessory creation, and quantity take-off system for *Starts*, a major construction company in Japan

2018/11-2019/12 **Structural design, *Jun Sato Structural Engineers*** Tokyo, Japan

- Wrote a control program of an analysis software developed by Prof. Jun Sato and applied several randomized algorithms in deciding the optimal morphology of structures
- Involved in modeling, plans drawing, structural analysis, and 3D fabrication work in two projects: *Serpentine Pavilion 2019* and *Tree House* used for the Equestrian Center at The Tokyo 2020 Olympics

2018/09-2018/11 **BIM System Development, *Kozo Keikaku Engineering*** Tokyo, Japan

- Participated in requirements definition, used the GDL language for geometric shapes generation to automatically output steel stair plans with ArchiCAD

2017/08-2017/09 **BIM System Development, *Ganlanshan Software*** Beijing, China

- Developed a family batch import and export tool for a new version of Revit plug-in

Research Projects

2023/09- present **Online Dynamic Object Detection and Tracking using LiDAR SLAM**

- Proposed a novel framework that uses registered 3D maps from LiDAR SLAM algorithms, occupancy grids, and the Kalman filter to directly detect and track dynamic objects online
- Improved the detection and tracking accuracy by the combination of a series of delicate considerations including ray tracing, state transition reward, memory weight factor, object life length, and distance cost function

2023/01- present **Robot Imitation Learning for Autonomous Social Navigation**

- Integrated a simulated environment in Unity 3D and neural network models via ROS for systematically manipulating different types and qualities of observation features
- Enabled online testing of the BC model, revealing that depth image representation of robots' distance to pedestrians significantly enhances autonomous social navigation.

2022/09-2023/01 **Reconstructing Piping Systems on Class-imbalanced 3D Point Cloud**

- Summarized and extended the limited research on generally applicable frameworks to segment and reconstruct 3D pipe systems model using an input of raw data sets from construction sites
- Demonstrated and explained a modified deep learning mode based on PointNet suitable for processing partially scanned pipes, highly imbalanced, and over noisy unstructured data sets

Programming Skills

Platforms: Revit, Unity, ROS, Processing, MPI, PyTorch, TensorFlow
Programming languages: C#, C++, Python, Java, MATLAB, Julia, GLSL

Awards & Certificates

Awards: 2nd Runner-Up of the *2024 International Conference on Computing in Civil Engineering*
Stipends: 2014 JASSO Student Scholarship for Short-term Study in Japan
Foreign languages: TOEFL 105, GRE 329, Japanese-Language Proficiency Test N1 Level