Curriculum Vitae

Dr. Chang-Yuan Liu

Project Assistant Professor,

Department of Construction Engineering,

Chaoyang University of Technology, Taiwan.

Address	Chaoyang University of Technology, 168, Jifeng E. Rd., Wufeng District, Taichung, 413310, Taiwan, R.O.C.
Phone	+886-4-2332-3000#4575
Fax	+886-4-2332-9898
E-mail	cyliu1993@cyut.edu.tw

Degrees:

2022	Ph.D.	National Central University, Taiwan	Department of Civil Engineering, Information Technology Program
2017	M.S.	National Central University, Taiwan	Department of Civil Engineering, Information Technology Program
2016	B.S.	National Central University, Taiwan	Department of Civil Engineering

Research Interests:

Building Information Modeling	Enhancing the value of BIM during the operation and maintenance phase, with a focus on low-cost information integration and transition from construction to operation and maintenance.
Artificial Intelligence	Focusing on engineering applications of AI and the development of mechanisms that enable rapid human verification and expert validation of AI-generated results.
Remote Monitoring	Using UAVs, robotic dogs, and monitoring devices as remote sensing platforms for data analysis and real-time feedback to support digital twin development and applications.
Construction Management	Applying information technologies to automate construction management processes and improve decision-making efficiency.
Disaster Management	Applying information technologies to enhance disaster information integration, real-time analysis, and emergency response.

Professional & Research Experience:

2026	Chaoyang University of Technology - Department of Construction Engineering	Project Assistant Professor
2025	St. John’s University - Department of Electrical Engineering	Assistant Professor
2024	RSEA Engineering Corporation - Danbei Road Project Office	Deputy Site Manager
2024	St. John’s University - Department of Electrical Engineering	Adjunct Assistant Professor
2023	Hsinchu County Fire Bureau - Resilient Taiwan Program	Information Technology Consultant

2023	Hsinchu Biomedical Science Park - Startup Company	Artificial Intelligence Engineer
2022	Industrial Postdoctoral Program - Taipei Medical University	Postdoctoral Researcher
2021	Conference on Computer Applications in Civil and Hydraulic Engineering - Secretariat	Section Chief
2019	Research Abroad Program - University of Washington	Visiting Scholar (disrupted by COVID-19)

Honor & Awards:

2024	Chinese Institute of Civil and Hydraulic Engineering, Taiwan	Annual Paper Award
2020	The 24th Symposium on Construction Engineering and Management	Outstanding Paper Award
2019	The 23rd Symposium on Construction Engineering and Management	Best Paper Award
2018	2018 HPE AI Hackathon	Third Prize

Patents:

2026	Method and Computing Device for Non-Invasive Blood Glucose Estimation, Device for Non-Invasive Measurement of Electrocardiogram Signals, and Non-Transitory Computer-Readable Recording Medium	Taiwan Invention Patent No. I916724

Certifications:

- Fire Prevention Manager
- Disaster Prevention Specialist
- Drone Remote Pilot License
- iPAS AI Application Planner

Research Project Experience:

- **Digital Avatar Value-Added Application for Built Environments: Applying Deep Learning / BIM / Smart Meters / IoT for Energy Management**

  Research Assistant | Ministry of Science and Technology (MOST) Research Project
- **Establishment of 3D Interactive Visual and Information Platform for the First Nuclear Power Plant**

  Research Assistant | Taiwan Power Company (Taipower) Commissioned Research Project
- **Taoyuan City Social Housing Building Information Model (BIM), Smart Building, Green Building in Maintenance Management Mechanism Planning and Import Service**

  Research Assistant | Government-Commissioned Professional Service Project, Taoyuan City Government
- **Maintenance & Management System of Process Safety Assessment and Risk Control for Petroleum Plant Facilities**

  Research Assistant | Ministry of Science and Technology (MOST) Integrated Research Project
- **Development of Cyber-Physical System-Based MSOC Protection Mechanism: Using Deep Learning / Channel State Information and Sensors / Building Information Modeling**

  Research Assistant | MOST–Ministry of National Defense Joint Research Project
- **Development and Evaluation of a Model for Construction Industry Expert Participation in Information Application Courses**

  Research Assistant | Ministry of Education (MOE) Teaching Practice Research Program
- **Development of Regional Critical Infrastructure Interdependency Model for Disaster Prevention, Mitigation and Recovery Using**

Ontology with Semantic Rules

Research Assistant | Ministry of Science and Technology (MOST) Research Project

Dissertations:

1. Liu, C. Y. (2022). *Design of Ontology and Building Information Models for Fire Rescue Deployments*. Ph.D. dissertation, Department of Civil Engineering, National Central University, Taoyuan, Taiwan.
2. Liu, C. Y. (2017). *Combining Building Information Modeling with Ontology Models for Vulnerability Analysis of MRT Stations*. Master's thesis, Department of Civil Engineering, National Central University, Taoyuan, Taiwan.

Journal Papers:

1. 戴荏國, 劉展元, 朱峻平, 王如觀, 王蘇杰, 周建成. (2023). 導入建築資訊模型與本體論之室內避難收容所空間配置作法. 中國土木水利工程學刊, 35 (7), 669-680.
2. Wang, R. G., Wu, P. Y., Liu, C. Y., Tan, J. C., Chuang, M. L., Chou, C. C. (2022). Route Planning for Fire Rescue Operations in Long-Term Care Facilities Using Ontology and Building Information Models. Buildings, 12(7), 1060. doi: 10.3390/buildings12071060
3. 劉展元, 吳佰餘, 談家成, 莊梅菱, 王如觀, 周建成. (2021). 導入建築資訊模型與本體論之自動化火場搶救佈署作法－以住宿式長照機構建築為例. 中國土木水利工程學刊, 33(8), 641-651.
4. Hsieh, C. C., Liu, C. Y., Wu, P. Y., Jeng, A. P., Wang, R. G., & Chou, C. C. (2019). Building Information Modeling Services Reuse for Facility Management for Semiconductor Fabrication Plants. Automation in Construction, 102, 270-287. doi: 10.1016/j.autcon.2018.12.023

Conference Papers:

1. 劉展元, 林緯. (2026). 探討應用大型語言模型於自動生成施工日報：以淡北道路工程為例. 第 30 屆營建工程與管理學術研討會, 國立臺北科技大學.
2. Liu, H. C., Liu, C. Y., Chen, C. I., & Lee, W. C. (2024). ECG-based Features Estimation for Monitoring Blood Glucose Level of Human. 2024 8th International Conference on Biomedical Engineering and Applications (ICBEA), IEEE, 113–116.
3. Lin, Y. H., Yang, C. C., Li, C. R., Lee, J. C., Liu, C. Y., & Lee, W. C. (2024). Employing Critical Metrics from ECG for Ongoing Blood Pressure Monitoring. 2024 IEEE Sensors Applications Symposium (SAS).
4. Lin, Y. H., Tsai, H. Y., Li, C. R., Chen, C. I., Liu, C. Y., & Lee, W. C. (2023). Estimation of Blood Glucose Level of Human by Measuring Key Parameters in Electrocardiogram. 2023 IEEE International Instrumentation and Measurement Technology Conference (I2MTC), 1-6.
5. Liu, C. Y., & Chou, C. C. (2021). A Methodology for Non-programmers to Automatically Establish Facility Management System with Ontology in Building Information Modeling. Proceedings of the 18th International Conference on Computing in Civil and Building Engineering: ICCCBE 2020, 657-671.
6. 王蘇傑, 莊皓翔, 劉展元, 周建成. (2020). 光伏組件在建築表面分佈優化之探討. 第 24 屆營建工程與管理學術研討會, 國立臺灣科技大學.
7. 梁凱倫, 張智雄, 劉展元, 周建成. (2020). 以建築資訊模型與嵌入式系統呈現實時太陽能模組資訊. 第 24 屆營建工程與管理學術研討會, 國立臺灣科技大學.
8. 劉展元, 吳佰餘, 周建成. (2019). 以建築資訊模型暨本體論改善醫療機構之火場搶救效率. 2019 電子計算機於土木水利工程應用研討會, 國立臺灣科技大學.

9. 吳佰餘, 劉展元, 周建成. (2019). 以 BIM 改善消防破壞器具在長期照顧機構之火場搶救效率. 第 23 屆營建工程與管理學術研討會, 逢甲大學.

10. Liu, C. Y., Jeng, A. P., Chang, C. H., Wang, R. G., & Chou, C. C. (2018). Combining Building Information Modeling and Ontology to Analyze Emergency Events in a Building. ISARC. Proceedings of the International Symposium on Automation and Robotics in Construction, 35, 1-6.

11. Chu, C. P., Liu, C. Y., Hsieh, C. C., & Chou, C. C. (2017). HAZUS-based Drill Scripts Generation Using Unity and Ontology with Semantic Rules. ISARC. Proceedings of the International Symposium on Automation and Robotics in Construction, 34, 1-6.

12. 劉展元, 周建成. (2017). 結合建築資訊模型與本體論推論設施災害影響與應用. 第 21 屆營建工程與管理學術研討會, 雲林科技大學.

13. 劉大誠, 劉展元, 周建成. (2016). 運用建築資訊模型與現行法規於捷運管線之查核. 第 13 屆結構工程研討會暨第三屆地震工程研討會, 諾富特華航機場飯店.