Xudong TANG

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Department of Building and Real Estate, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

EDUCATION

The Hong Kong Polytechnic University, Hong Kong SAR Sep. 2024 - Present

- M.Sc., Intelligent Construction
- GPA: 3.67
- Main courses: Information Management for Construction and Real Estate, Machine Learning and Data Mining for Construction, Automation and Robotics in Construction, etc

Hainan University, Hai Kou, China Sep. 2020 – June. 2022

- B.Sc., Mathematics and Applied Mathematics
- GPA: 82.75 / 100
- Main courses: Mathematical Analysis, Mathematical Statistics, Mathematical Model, Python Programming, Topology, Graph Theory, etc.

Central South University, Changsha, China Sep. 2015 – June. 2020

- B.A., Architecture
- GPA: 82.65 / 100
- Main courses: Architecture Design, Building Structure, Architectural Construction, Architectural Mechanics, Architectural Equipment, Sustainable Architectural Technology etc.

RESEARCH INTERESTS

- Sensors, IoT, Construction Robotics
- AI Assisted Design and Construction
- VR / AR Application in Construction
- Smart Construction Management

RESEARCH EXPERIENCE

A MOE-based Visual Understanding Model with Progressive Alignment

ICCV 2025 on processing Oct. 2024 - Present

Assessing Construction Workers' Situational Awareness Through Eye Tracking

Master Dissertation | Supervisor: Prof. JoonOh SEO Sep. 2024 - Present

- Designed the Unity Scenes involving several types of construction hazards.
- Obtained eye tracking data when participants detecting the hazard conditions.
- Developed a Machine Learning based model to predict the accuracy of hazard identification.

3D Printing and Structural Performance Evaluation of a Bridge Model based on Topology Optimization Design

Course Project | Supervisor: Prof. Yiwei WENG Jan. 2025 - Present

- Made the model by Rhino and Grasshopper.
- Designed the key components including the beams and columns based on Topology Optimization.
- Assessed the structural performance on software and 3D printing model tests.

The Impacts of Wearing Back Exoskeletons on Ergonomic Risks in Construction Workers' Manual Handling Tasks

Course Project | Supervisor: Prof. JoonOh SEO Jan. 2025 - Present

- Developed a computer vision model to assess the ergonomic risk of experiment participants.
- Designed the experiments based on different work conditions, collect and process data to reach the conclusion.

A Mini Review of Interaction Methods of Human-robot Collaboration for On-site Construction and Recommendations for its Applications in Hong Kong

Review | Supervisor: Prof. Hung-Lin Chi Sep. 2024 – Dec. 2024

- Investigated the methods of Human-robot Collaboration (HRC) in on-site construction.
- Provide suggestions based on pragmatic conditions of Hong Kong.

The Application of Smart Construction Platform in Promoting Safety Management of Construction Site: A Case Study in Hong Kong

Case Study | Supervisor: Prof. Hsi-Hsien WEI Sep. 2024 – Dec. 2024

- Researched on different technology methods for smart construction, including sensors and IoT, camera and computer vision location and detection, and ai-based big data management.
- Surveyed on the implementation of smart construction.

A Framework of Consortium Blockchain and BIM Integrated System for Managing and Maintaining Building Pipeline Monitoring Data

Course work | Supervisor: Prof. JoonOh SEO Sep. 2024 – Dec. 2024

- Proposed a framework of consortium Blockchain and BIM integrated system for managing and maintaining building pipeline monitoring data, thereby extending the building lifecycle.

Identifying Optimization Strategies to Increase Electric Vehicle Sales Through Data Analysis Methods

2021 “Huashu Cup” Mathematical Contest in Modeling | Supervisor: Prof. Haohua Wang June 2021 – Oct. 2021

- Developed a fuzzy comprehensive evaluation model to analyze the customers' satisfaction with different brands.
- Developed a regression model to predict the sales data.
- Developed a dynamic programming model to identify factors that can increase the predicted purchase probability.

Design: Changsha No.3 Workers’ Culture and Sports Complex

Design Work Aug. 2019 – Dec. 2019

- Developed concept design, architectural drawings and 3D models.
- Drew the analysis drawings and presentation slides.

WORK EXPERIENCE

High School Branch, Kehan Off-campus Training Center Shenzhen, China

Physics Teacher Apr. 2024 – Aug. 2024

Shanghai Top Display Optoelectronics Company Shanghai, China

Project Coordinator Oct. 2022 – Jan. 2024

Architecture Dep, Changsha Institute of Urban Planning Changsha, China

Architect Intern July. 2019 – Dec. 2019

AWARDS & HONORS

- 2021 First Prize of “Huashu Cup” China Mathematical Contest in Modeling

SKILLS

- **Software and Tools**:
  MS Office, AutoCAD, Revit, SketchUp, Photoshop, Unity, Rhino+Grasshopper
  Mathematics and Coding: Python (Numpy, Pandas, Pytorch), MatLab, SPSS, Lingo
- **Language**: Mandarin Chinese (Native), English (IELTS 6.5)