Xinyu Su

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Personal Profile

Dedicated to AI-aided architectural generative design and architectural spatial analysis. Shifted towards computational design after 6 years of studying traditional architecture. Spent a year and a half exploring the field of Artificial Intelligence Generated Content, learning the basic algorithms and architectures, and initially establishing a knowledge of AI+Architecture in both academia and applications. Have a strong academic interest and excellent self-motivation and creativity.

Education

South China University of Technology *Guangzhou, China*

Master of Architecture, Architecture *Sept 2022 - Current*

- **Average Mark:** 85.71/100
- **Main Courses:** Architecture Design and Theory II (92), Modern Theory on Western Architecture (90), Simulation and Design of Outdoor Thermal Environment (86)

Xiamen University *Xiamen, China*

Bachelor of Architecture, Architecture *Sept 2017 - Jun 2022*

- **Weighted Average Mark:** 86.31/100 (GPA: 3.63/4.00)
- **Main Courses:** Computer-Aided Design (91), The Elements of Design (II) (90), Architectural Model (90), Public Architecture Design (3) (90), Architectural Structure (90), Architecture Cognition Practice (93), Model-building of Architectural Information (BIM) (89), Digital Expression of Architectural Design (87), Building Materials (90), Urban Design of Synthesis (91)
- **Honors:** First-Class Academic Excellence Scholarship (2019), Merit Student of School of Architecture (2021)

Publications

Conference Proceedings

Text to Terminal: A framework for generating airport terminal layout with large-scale language-image models *Under review*

Xinyu Su, Jianhe Luo, Zidong Liu, Gaoliang Yan

- This paper proposes a workflow that, in the early design phase, employs a fine-tuned Stable Diffusion model to generate terminal design solutions from textual descriptions and a site image, followed by a quantitative evaluation from an architectural expert's viewpoint.

ZoeLength: Framework for indoor measurement from a single interior image for the popularization of AI interior design *Under review*

Xinyu Su, Zidong Liu, Mingzhuo Yang, Daniel Koehler

- This paper explores a new framework for indoor measurement based on a single interior image. Without any reference and camera calibration, our method ZoeLength can estimate the target size by taking a photo with the simplest mobile device. To increase the accuracy of measurement, we trained a depth estimation model specifically for indoor scenes using our own collected dataset.

Journal Articles

Evaluation of Design Parameters for Daylighting Performance in Secondary School Classrooms Based on Field Measurements and Physical Simulations: A Case Study of Secondary School Classrooms in Guangzhou
Jianhe Luo, Gaoliang Yan, Lihua Zhao, Xue Zhong, Xinyu Su
Buildings p. 637. MDPI, 2024

Research Experience

Multi-objective optimization design strategy for the daylighting and thermal performance of secondary school teaching buildings in Guangdong Province *Guangzhou, China*

Natural Science Foundation of Guangdong Province *Jan 2024 - Current*

- Carried out parametric modeling based on prototypes of 4 typical secondary school teaching buildings, generating thousands of building shapes.
- Used ladybug series plug-ins to simulate the daylighting and thermal performance of the generated shapes, and used Wallacei for multi-objective optimization.
- Carried out data processing for the subsequent input of neural network.

Research on Large-scale model integrated with urban context based on Reinforcement Learning with Human Feedback *Online*

3rd Computational Art and Tech Workshop by Architectural DigitalFUTURES *Jul 2023*

- Studied and practiced the extension of Stable Diffusion in architecture and urban areas, urban data generation, data labeling, and other technologies.
- Utilized reinforcement learning frameworks for model training to complete a design work in the style of Amsterdam city.

Professional Experience

Sengine Technology Ltd *Shenzhen, China*

AIGC Algorithm Development Intern *Jul 2023 - Sept 2023*

- Trained a Stable Diffusion large model for AI-aided commercial interior design and dozens of Lora models for indoor furniture products.
- Developed an innovative workflow for precise generation and replacement of products in AI interior design and collaborated with other colleagues to automated the process.
- Completed the generation and replacement of more than 30 furniture products, and the related functionality was presented in the final applet.

Architectural Design and Research Institute of South China University of Technology *Guangzhou, China*

Architectural Design Intern *Jul 2022 - Dec 2023*

- **Nansha Mega Urban Complex Planning and Design Study International Competition (Winning Solution, Consortia with HPP Architekten):** Collaborated with architects on the initial planning, design concept development, and architectural modeling design of the sports stadium.
- **Hong Kong University of Science and Technology (Guangzhou) Project Phase II (Winning Bid):** Collaborated with architects on the design of the teaching complex and kindergarten.
- **15th National Games Guangdong Olympic Sports Center Upgrade Project (Winning Bid):** Collaborated with architects on the conceptual design of the main venue's facade renovation.

Leadership & Teamwork Experience

South China University of Technology, School of Architecture *Guangzhou, China*

Teaching Assistant of Design Course *Sept 2023 - Dec 2023*

- Assisted a group of sophomore students with 2 design assignments, providing guidance in the conceptualization and development of each student's solution.

Xiamen University, School of Architecture *Xiamen, China*

Vice Minister of Academical Department *Jul 2018 - Nov 2019*

- Organized more than 10 academic lectures, knowledge sharing sessions, and other activities to enhance the academic level of students.
- Assisted in planning and organizing 2 structural design competitions with more than 50 participants, undertaking moderating duties and data statistics.

Skills & Interests

Software Stable Diffusion, Rhino and grasshopper, CFD-PHOENICS, AutoCAD, Photoshop, Illustrator, InDesign, SketchUp, Lumion.

Programming Python (basic).

Soft Skills Time Management, Collaboration, Problem-solving, Creativity, Self-motivation.

Interests Piano (achieved the level of Grade 10 in Arts Grade Examination of China), Languages, Working out.