



Zhuo-Peng He

HE Zhuo-Peng is a design researcher whose work connects design studies, design thinking, multi-criteria decision making, multi-objective optimization, parametric design, image recognition, machine learning and healthy ageing.

His research links interior and hospitality design, AIGC and parametric design tools, conceptual co-evolution, image-based analysis and health-oriented environments. He also has practice experience in data analysis, design assistance, course teaching support and architectural/interior project development.

Research interests: design studies; design thinking; MCDM; multi-objective optimization; parametric design; image recognition; machine learning; healthy ageing; AIGC-assisted design cognition.

M.A. Design, Interior Design, Macau University of Science and Technology

B.A. Environmental Art Design, Guangzhou Academy of Fine Arts

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Academic Qualification

Master of Design, Interior Design, Macau University of Science and Technology

澳門科技大學

2023.09-2025.06 · GPA: 3.39/4.00

Research directions include the influence of different stimuli on designers' divergent-thinking cognitive process and design co-evolution process during architectural concept generation, and the value and cultural discussion of blank-space design in Macao star-rated hotel front desks.

Bachelor of Arts, Environmental Art Design, Guangzhou Academy of Fine Arts

廣州美術學院

2018.09-2022.06 · GPA: 3.5/5.00

Selected Publications and Manuscripts

Virtual Gardening as a Therapeutic Intervention for Aging Populations

A systematic review of cognitive and emotional health outcomes. *Frontiers in Medicine*, SCIE, IF 3.0, Q1 · Accepted / under expert review in source records.

Co-author: Fang-Han Mao, Zhuo-Peng He, Guan-Qiang Wang and Yi-Fan Zhang · Co-first author.

Decoding Horror Vacui in Luxury Symbolism

A hybrid approach from a Gestalt Theory perspective. *Leonardo*, AHCI, IF 0.3, Q1 · R2 / forthcoming.

Co-author: Yi-Fan Zhang, Ge Sheng, Lei Xiong, Kai-Xin Huang, Zhuo-Peng He and Bo-Wei Zhu.

Optimization of Interior Environmental Design to Mitigate Nosocomial Infection Risks in Elderly Dental Outpatient Clinics

A MADM-based genetic algorithm approach. *Design Journal*, AHCI, IF 1.1, Q1 · Under review.

Co-author: Zhuo-Peng He, Ge Wang, Shu-Ting Tan, Yina Cao and Kang Shen · First author.

Focusing on Restaurant Repurchase Intention

A mixed research approach to Lingnan Cantonese cuisine theme restaurants. *Design Decision Analytics* · Published.

Co-author: Lei Guan, Guan-Qiang Wang and Zhuo-Peng He · Second author.

Research Projects

Fear of the Blank Space and Spatial Perception

Value representation and cultural exploration in front desk design of Macao's star-rated hotels · 2024.

Work included writing, literature review, Macao hotel sampling and field visits, data collection for star-rated hotels, Photoshop preprocessing, ArcGIS analysis, image-pixel visualization and independent-samples t-test analysis.

Impact of different stimuli on cognitive process in conceptual generation

Comparison of parametric design tools and generative AI tools · 2024-2025.

Work included experiment construction, scene setup, participant training, think-aloud and interview data collection, NVivo coding, time statistics, Excel data integration, non-parametric testing and linear regression analysis.

Additional ongoing research

Dynamic evolution of divergent thinking: intervention effects of AIGC and parametric tools in conceptual co-evolution · Target journal: Design Studies, SCIE, IF 4.8, Q1.

Association between older adults' functional autonomy and wet-market modernization · Target journal: Social Science and Medicine, SSCI, IF 5.0, Q1.

Work Experience

Data Analyst and Design Assistant, CCIG (Zhuhai) International Culture Development Co., Ltd. CCiG 集智（珠海）國際文化發展有限公司

2023.06.30-present · Zhuhai, Guangdong.

Course Assistant, Guangzhou Academy of Fine Arts 廣州美術大學

2022.03-2022.05 · Guangzhou.

Design Assistant, Shenzhen Machinery Institute Architectural Design Co., Ltd.

深圳機械院建築設計有限公司

2022.05-2022.10 · Shenzhen, Guangdong.

Technical Skills

- Data analysis: regression analysis, Kano Model, Rough Set Approach, GIS, clustering analysis, think-aloud protocol analysis, Entropy Method, Octopus web crawling, hypothesis testing, Space Syntax, Grounded Theory, Best-Worst Method, TOPSIS and VIKOR.
- Machine learning and expert systems: PyCharm, machine learning, semantic image segmentation, AHP, FDM and DEMATEL.
- Spatial and visual design: Rhino, Grasshopper, SketchUp, 3Ds Max, D5, Enscape, V-Ray, Lumion, Photoshop, Stable Diffusion, Illustrator and InDesign.

Awards and Practice

- Outstanding Camp Member, Machine Learning-Based Urban Image Analysis Joint Training Camp, Harbin Institute of Technology and Macau University of Science and Technology, 2023.07.
- First Prize, 2023 China Fourth Division Kokdala Second Grassland Night Tourism Homestay Design Competition, 2024.04.
- Faculty of Humanities and Arts Student Commendation, Macau University of Science and Technology, 2025.06.
- Excellent Works Award, Graduation Creation Exhibition, Faculty of Humanities and Arts, Macau University of Science and Technology, 2025.06.
- Practice projects include Tianchang Cloud Architecture trampoline hall and cloud bookstore design, the 10th Macao Industrial and Commercial Exhibition MUST booth design, Kokdala tourism homestay design competition, Shenzhen Shajing Culture and Sports Center facade design, and Chengdu Qincheng cultural-tourism/art-center scheme design.