

Boyuan Yu

Global Exceptional Talent UK

Fellow, Royal Society for Arts (RSA)

Researcher, Designer, Editor, Tutor

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Research keywords: Digital Craft; AI-driven design; XR; Robotics; Materiality; Upcycling; Circular engineering for architecture; sensory theory

Education Background

The Chinese University of Hong Kong CUHK, School of Architecture / PhD. JAN 2022 - DEC 2025, HONG KONG (GPA: 4.0/4.0)

University College London UCL, Bartlett School of Architecture / MArch Architectural design. SEP 2020 - DEC 2021, LONDON (GPA: 4.0/4.0)

University of Oxford/ Modern Art Program. NOV 2021 - JUN 2022, OXFORD

Harbin University of Science and Technology/ BA, Environmental Design, SEP 2015 - JUN 2019, Harbin (GPA: 4.0/4.0)

Harbin University of Science and Technology/ BBA, Accounting. SEP 2015 - JUN 2019, Harbin (GPA: 4.0/4.0)

Publications

Journal (peer-review)

1. Boyuan Yu, Yuemin Gong, Jianing Luo & Adam Fingrut (2025) Integrating CAD and Extended Robotics for Masonry Restoration: A Scalable Workflow for Historic and Heritage Buildings (HHBs) - **Nature|npj Heritage Science**, <https://doi.org/10.1038/s40494-025-02089-9>
2. Boyuan Yu, Jianing Luo, Kiwook Rha, Balsam Al-Hadithi, Zhiyong Li, Seohyeon Kim, Zijun Zhao, Yue Lu, Provides Ng (2025) Between Social and Sustainable: A Collaborative Wood Upcycling Design Process integrating AI and Mixed Reality Tools, **Frontiers of Architectural Research**, <https://doi.org/10.1016/j.foar.2025.08.010>
3. Jianing Luo, Boyuan Yu, Yuan Jiang, Adam Fingrut & Adam Holloway (2025). Upcycling of Regular Wood Trunks and Logs Using Wave Function Collapse (WFC), Augmented Reality (AR), and Mixed Reality (MR) Technologies for Circular Design. **Scientific Reports**. <https://doi.org/10.1038/s41598-025-20398-8>
4. Jianing Luo, Boyuan Yu, Yi Shi, Yangzhi Li, Adam Fingrut (2024) Voxel-based Modular-Architectural Design Strategy (VMADS) toward Autonomous Architecture, **BioResources**, <https://doi.org/10.15376/biores.19.3.6368-6379>
5. Boyuan Yu, Jianing Luo, Yi Shi, Mingming Zhao, Adam Fingrut, Lei Zhang (2023) Framework for sustainable building design and construction using off-cut wood, **Nature|npj Materials Sustainability**, <https://doi.org/10.1038/s44296-023-00002-8>
6. Yangzhi Li, Boyuan Yu, Adam Fingrut, Jingwei Li (2023) Design for Manufacturing and Assembly (DfMA) of Standardized Modular Wood Components, **Technology|Architecture + Design**, <https://doi.org/10.1080/24751448.2023.2246804>

- Boyuan Yu, Fingrut Adam (2022) Sustainable building design (SBD) with reclaimed wood library constructed in collaboration with 3D scanning technology in the UK, **Resources, Conservation and Recycling**, <https://doi.org/10.1016/j.resconrec.2022.106566>

Conference (peer-review)

- Patrick So, Boyuan Yu, Jianing Luo, Evan Wu and Addin Cui, Provides NG, From Craft To Community: Participatory Upcycling In Public Housing Via Digital Fabrication, CAAD Futures 2025, Hong Kong.
- Yangzhi Li, Yuemin Gong, Boyuan Yu, Adam Fingrut, Machine Learning-Based Visual Recognition Approach for Handling Complex Components in Robotics Fabrication, XXVIII SIGraDi Conference 2024|sigradi 2024 Biodigital Intelligent System xxviii conference of iberoamerican society of digital graphics punta del este, Barcelona.
- Yuehong Zhou, Lin Li, Jianing Luo, Boyuan Yu, Adaptive Behavior in Digital Nomads: An Interactive Spatial Structure Study Using Machine Learning, XXVIII SIGraDi Conference 2024|sigradi 2024 Biodigital Intelligent System xxviii conference of iberoamerican society of digital graphics punta del este, Barcelona.
- Jianing Luo, Boyuan Yu, Haohan Peng, Yi Shi, Yangzhi Li, Fingrut Adam (2023) Deep generative modeling tasks: Automatic generation of building facades with Pix2Pix GAN for Hong Kong city expansion and renovation, XXVII SIGraDi Conference 2023|sigradi 2023 accelerated landscapes!! xxvii conference of iberoamerican society of digital graphics punta del este, uruguay.
- Boyuan Yu, Fingrut Adam (2023) A Deep Learning Framework of Easy-to-reuse Irregular Brick Detection and Classification with YOLOv5, IASS 2023|The International Association for Shell and Spatial Structures (IASS) symposia 2023
- Yangzhi Li, Yusong Hu, Tan Tan, Boyuan Yu, Jingwei Li, Adam Fingrut (2023) AR-Assisted Assembly in Self-Build Construction with Discrete Components, The 30th EG-ICE: International Conference on Intelligent Computing in Engineering. London, United Kingdom
- Boyuan Yu, Lei Zhang (2021) A virtual model generation based on Grasshopper-Wasp, 2021 2nd International Conference on Intelligent Design (ICID), DOI: 10.1109/icid54526.2021.00052
- Boyuan Yu, Lei Zhang, Haoxing Zhang (2021) Towards “Autonomous”: A review of the “stereotypical” behaviors in Robotic construction, 3rd International Symposium on Architecture Research Frontiers and Ecological Environment (ARFEE 2020), DOI: 10.1051/e3sconf/202123704035 Part of ISSN: 2267-1242

Patent

- Boyuan Yu. Stool, (Chinese creative square stool), (CN202130093812.6; CN306591714S);
- Boyuan Yu. Column(2), (CN202130093759.X; CN306599093S)
- Boyuan Yu. Column(1), (CN306599094S)
- Boyuan Yu. Chair (Chinese creative seat), (CN202130093802.2; CN306591713S)
- Boyuan Yu. Coffee table (square table Chinese creative coffee table), (CN306584531S)
- Boyuan Yu. Column, (CN202130575133.2; CN307012475S)
- Boyuan Yu. Chair Aggregation, (CN202130574974.1; CN307115302S)

Teaching Experience

SEP 2024- now Visiting Tutor, **Oxford School of Architecture OBU**, MA Digital Craft in Architecture.
 AUG 17-31, 2024 Young Tutor, **Tsinghua University (THU)**, International summer program
 MAY 2024 Competition tutor, **Harbin University of Science and Technology (HUST)**, Milan Design Week China Design Exhibition. for MPhil student awarded First-Class winner (
 SEP 2021-JUN 2022; SEP 2022-JUN 2023; SEP 2023-JUN 2024 Teaching Assistant, **The Chinese University of Hong Kong (CUHK) ARCH5110/6110K** Advanced Architectural Design Studio I & II, MArch 1&2 student core course,

SEP 2021- JAN 2022; SEP 2022-JAN 2023 Teaching Assistant, **Chinese University of Hong Kong (CUHK) ARCH5421** Advanced Building Systems I - Technical Compliance Course MARCH 1/2 student core course.

SEP 2023-MAR 2024 Teaching Assistant, **Chinese University of Hong Kong (CUHK) URBD 5704** Urban Design Research Methods, core course, Master of Urban Design postgraduate.

Lecture

17 OCT, 2024. New Sensory Interaction in Architecture, **Oxford School of Architecture OBU**, MA Digital Craft, [link](#)

17 OCT, 2024. Enhancing Innovation and Technology Integration for Upcycling Wood, **Oxford School of Architecture OBU**, MA Digital Craft, [link](#)

30 APR 2024. **Southern University of Science and Technology (SUSTech)** Lecture, – Upcycling Wood in Architecture: Today's Methods and Tomorrow's Technologies.

17 MAR 2024. **Northeast Forestry University** Lecture, AI-assisted design, AR/VR HCI in architectural design.

27 FEB 2024. **Harbin Institute of Technology (HIT)**, Lecture, AI, Robotics in architectural design and management.

Workshop

30 DEC 2024 -17 FEB 2025 Instructor, The Chinese University of Hong Kong (**CUHK**) and **HKFYG** Jockey Club Jat Min Youth S.P.O.T. e-co community upcycling wood sign AI and XR workshop

Academic and Research

Research Experiences

Oxford School of Architecture, Oxford Brookes University

OCT 2024 -now, Visiting Researcher (international collaborator) at Oxford, DCA

The Centre for Robotics in Construction Architecture (CRCV) LAB. [Link](#)

FEB 2023-now, researcher, Hong Kong

Environment-Behaviour of Architectural Society of China (CEB-ASC)

2021-now, Researcher, Beijing

HUST College of Civil Engineering and Architecture

SEP 2019.09- SEP 2020, Research Assistant, Harbin

Research Grant:

PI, UABB Shenzhen Biennale Foundation, 10th Bi-City Biennale of Urbanism\Architecture 2025 Shenzhen, China – Street Heterotopia: Huaqiangbei Metaverse Interface, £ 3,300.

CO-PI, Participator, Theoretical and Practical Innovations in Digital Therapy for Design and Aesthetic Education, Research on high-quality development of design education in the digital age, China Association of Higher Education. 2025-2027 £ 5,500.

CO-PI, Participator, Research and exploration on the aesthetic education teaching model of colleges and universities guided by the "aesthetic education immersion" policy'. Higher education Teaching reform project of Heilongjiang Province, £ 1,050.

PI, instructor, XR+AI summer program, Tsinghua University stipend £ 380.

PI, Participator, E-co architecture: The use of AR-assisted CAAD tools in enhancing public participation in upcycling wood.' Design Trust, £ 4,753. [link](#)

CO-PI, Participator, Design Thinking for Prototyping, Automation, and Sustainable Material Use.

Teaching Development and Language Enhancement Grant. 'CUHK, £28,516 [link link link](#)

CO-PI, Participator, Enhancing AI in Education by Exploring 3D Scanning, Body Tracking, and Point-Cloud Generation. Teaching Development and Language Enhancement Grant. 'CUHK, £28,516 [link](#)

Participator, Teaching Development and Language Enhancement Grant. 'Creative Technologies – A Heuristic Approach to Digital Design and Fabrication Tools in the Classroom.' CUHK, £ 45,000

Participator, General Research Fund 2021, 'The Impact of eLearning on Architecture and Design Studio Pedagogy in the New Normal. CUHK, £ 73,115. 01/01/2022 – 01/01/2024.

Competition project grant

Co-PI, participator, Harbin Airport Terminal Planning Consultation Project 2025 HIT Asian Winter Games Atmosphere Creation Scheme Design, Harbin Institute of Technology Urban Planning and Design Institute Co., Ltd. (HITUPDI). £ 77,000

Society Research Works

Editorial Board

APR 2025-now Young Board editorial, Human Settlements and Sustainability

JAN 2025-now Executive Editorial Board, Landscape Architecture Frontiers

FEB 2022-now Young Board editorial, Journal of Industrial Design

Memberships

FEB 2025- now Member, The American Institute of Architects(AIA) Hong Kong - Young Architects Group (YAG). [link](#)

AUG 2024- now Member, The Hong Kong Young Scientist Association (HKYSA).

FEB 2023- now Member, The Centre for Robotics in Construction Architecture (CRCV) LAB. [Link](#)

MAY 2021 Member. Chinese Society of Landscape Architecture, CHSLA [Link](#)

APR 2021- APR 2022 Member. Chinese Institute of Stage Design

JAN 2021- JAN 2022 Member. Committee on Environment-Behaviour of the Architectural Society of China CEB-ASC

Review Works

Journal Reviewer

Construction Robotics

Automation in Construction

Human Settlements and Sustainability

Buildings

Sustainable Futures

BioResources

Societies

Landscape Architecture Frontiers

Guangdong Landscape Architecture

Current green chemistry

Qeios

Landscape Architecture

IEEE Access

Heritage

Advances in Science, Technology and Engineering Systems Journal (ASTESJ)

Journal of Industrial Design

Conference Reviewer

14 SEP 2025 CHI 2026, The ACM (Association of Computing Machinery) CHI 2026

25 AUG 2025 CAADRIA 2026, The Association for Computer-Aided Architectural Design Research in Asia (CAADRIA)

01 JUL 2025 DEFSA 2025, 2025 Design Education Forum of Southern Africa Conference

MAY 2025 xArch Symposium 2026: From Inspiration to Solutions 2025.

04 APR 2025 Cumulus Association 2025, The Global Association of Art and Design Education and Research

21 MAR 2025 SiGraDi 2025, Sociedad Iberoamericana de Gráfica Digital (SIGraDi) 2025 (scientific committee)

04 MAR 2025 FINEX 2025, 2025 1st International Conference on Finance, Innovation, and Economics for Sustainable Ecosystems (FINEX) (TPC reviewer)

25 FEB 2025 ICOMSE 2025, 2025 2nd International Conference on Management and Sustainable Environment (ICOMSE) 2025 (TPC reviewer)

23 OCT 2024 International Conference on Renewable Resources and Remote Sensing Mapping Technology (RRRST 2025) (PC member)

AUG 2024, CAAD Futures 2025, 'Catalytic Interfaces' 21st CAAD Futures (PC member)

AUG 2024, CAADRIA 2025, The 30th Annual Conference for Computer-Aided Architectural Design Research in Asia (CAADRIA)

APR 2024, The 7th International Conference on Advances in Civil and Ecological Engineering Research (ACEER 2025)

FEB 2024, 6th International Conference on Advances in Civil and Ecological Engineering Research (ACEER 2024)

JAN 2024, The 1st International Conference on Digital Technologies and Sustainability Accounting (ICDSA) 2024 [link](#)

AUG 2023, CAADRIA 2024, The 29th Annual Conference for Computer-Aided Architectural Design Research in Asia (CAADRIA)

SEP 2022, China Automation Congress CAC 2022

JAN 2022, The 7th International Conference on New Energy and Future Energy Systems (NEFES 2022)

May 2021, The 6th International Conference on New Energy and Future Energy Systems (NEFES 2021)

Conference, Symposium, Workshops, Exhibitions

Conference hoster and committee member:

APR 2023, Organizer and Oral speaker, CUHK & Politecnico di Milano Ph.D. Symposium, Reclaimed Discrete Elements in Sustainable Building Design and Construction (SBDC).

APR 2022, Organizer and Oral speaker, CUHK Ph.D. Symposium, Digital and Automated Workflow (DAW) for Historic and Heritage Buildings(HHB) Restoration. Host the digital technology and construction panel, 'Round the table.'

Media and dissemination:

22 JUN 2025, Amazing Architecture. Framework for Sustainable Building Design and Construction Using Off-Cut Wood [link](#)

13 JUN 2025, Parametric Architecture. From Waste to Wonder: A New Framework for Sustainable Building with Off-Cut Wood. [link](#)

12 JUN 2025, Trending now. From Waste to Wonder: A New Framework for Sustainable Building with Off-Cut Wood [link](#)

12 JUN 2025, World Architecture Community. From Waste to Wonder: A New Framework for Sustainable Building with Off-Cut Wood [link](#)

09 JUN 2025, Designboom. Generative building facades realise architecture renewal in Hong Kong [link](#)

15 OCT 2024, Tsinghua University. 2024 International Summer Project Showcase | Upcycling Wood Design and Manufacturing Using XR & AI Techniques, [link](#)

20 AUG 2024 Tsinghua University Academy of Fine Arts "Designing the Future, Shared Vision" 2024 International Summer Program Officially Opens, Young Tutor keynote speaker, [link](#)

5 DEC 2023 Author, TEACHING AND LEARNING INNOVATION EXPO 2023. Design Thinking for Prototyping, Automation, and Sustainable Material Use. [link](#).

22 MAY 2023, Design Trust. e-Co Architecture: A Cooperative Fab-Lab Exploring Ecological Community Facilities, [link](#)

17 NOV 2023, Nature portfolio. Revolutionizing Construction: Upcycling Irregular Wood Waste, [link](#)

17 OCT 2023, Wood Central. How 3D Scanning & Robotics is Driving Timber Construction Upcycling. A new report, published in Nature, looks to better utilize "waste wood" in reconstituted products for building projects. [link](#)

08 Nov 2022, NewsRx. Researchers at Chinese University of Hong Kong Target Sustainable Development [Sustainable Building Design (Sbd) With Reclaimed Wood Library Constructed In Collaboration With 3d Scanning Technology In the UK] [link](#)

Nov 2021, Book, The Bartlett B-Pro Show Book 2021, University College London, the Bartlett School of Architecture p79-83.[link](#)

Exhibition:

JAN 2026 UABB 10th Bi-City Biennale of Urbanism\Architecture 2025 Shenzhen, China – Street Heterotopia: Huaqiangbei Metaverse Interface.

19 SEP 2025, London Design Festival 2025 + Blackdot gallery. [link](#)

22 FEB 2025, HKFYG Jockey Club Jat Min Youth S.P.O.T. e-co architecture exhibition, HK [link](#)

AUG-SEP 2024, 'Tsinghua University Design Futures Shared Vision 2024' International Summer Program (2024) Integrating XR and AI-Driven Tools for Wood Upcycling. China (Beijing, China) [link](#)

NOV-DEC 2024, University College London, B-pro show

Competitions and Awards:

AUG 2025, Silver Awards, MUSE Design Awards [link](#). MAY 2025, Silver Awards, New York Architectural Design Awards [link](#). MAY 2025, Platinum Awards, London Design Awards [link](#). OCT 2024, Tsinghua University(THU) "Design+' Innovation and Entrepreneurship (International) Competition The International Special Invitation Track Creativity Group Second Prize. AUG 2024, Tsinghua University (THU) Best Social Impact Award. AUG 2024, Asia Design Week JUN 2024 Excellent Award (Professional). JUN 2024, CUHK CAADRIA Commendation Award MAY 2024, Tutor for First-prize winner, Milan Design Week China Design Exhibition. JAN 2024, INTERNATIONAL DESIGN FOR SAFETY AWARDS, The Lighthouse Club, CRCV. NOV 2021, Bronze Prize, B-Pro show winner [link](#). DEC 2019, First Prize Scholarship. JAN 2019, Reputation Award First Prize. JAN 2019, Reputation Award Second Prize. DEC 2019, School-level Three Good Students. MAY 2018, Reputation Award First Prize. FAB 2018, Bauhaus Design Competition Excellence Award.

Scholarships

OCT 2025, Outstanding Students Awards 2025 CUHK

MAY 2025, Talent Development Scholarship 2024/25, HKSAR Government Scholarships £ 950

JUN 2024, CUHK CAADRIA Commendation Award 2023/24.

JAN 2022-2026, PGS HKSAR government 2022-2025 £ 90,000

MAY 2018, Reputation Award Second Prize.

DEC 2018, Second-class scholarship.

MAR 2017, Honor Award Third Prize.

DEC 2017, First Prize Scholarship.

Professional experience:

SEP 2023 - DEC 2024, Project Architectural Designer, Harbin Airport Terminal Planning Consultation Project 2025 HIT Asian Winter Games Atmosphere Creation Scheme Design, Harbin Institute of Technology Urban Planning and Design Institute Co., Ltd. (HITUPDI).

- *Our project announced the Excellent Award (Professional), Asia Design Week 2024.*
- *Project to be posted at Industrial Design Journal 2024 [link](#)*
- *Project processing and media post [link](#)*

JUN 2019-JAN 2020, Architecture Assistant, East China Architectural Design & Research Institute
JUN 2018-AUG 2018, Architecture Assistant, Beijing Oriental Architectural Design Co., Ltd.
MAY 2017-AUG 2017, Architecture Assistant, Longsheng Group Co., Ltd.

Skills

3D Modelling: Rhino, Sketchup, Maya, 3D Max, Unity
3D Scanning: Photogrammetry: Reality Capture, laser scanning, CT scanning, Kitnet, Lidar
XR-VR/AR/MR: HP, Hololens, Oculus
Rendering: Vray, keyshot, Luminon
Image processing: Illustrator, Photoshop, InDesign
Video and game: Twinmotion, Unreal Engine
Bibliometric analysis: Citespace, VOSviewer
Robot: ABB, UR 3, 10(e), Control: Machina, Robotics, HAL,
Computer language: Python, Machine Learning, Deep Learning

Languages

IELTS Academic 7.5, Duolingo 115, Chinese Mandarin Native, Cantonese Basic, Italiano A2