Kai Sun

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Education

University of Glasgow *Glasgow, UK*
MSc in Software Development *Jan 2021 - Jan 2022*
- Graduated with Distinction

Qingdao University of Technology *Qingdao, China*
Bachelor of Architecture *Sept 2016 - June 2020*
- GPA: 84.57/100

Research Interests

Augmented Reality (AR), Extended Reality (XR), Human-Computer Interaction (HCI), Spatial User Interfaces, AR Systems and Frameworks

Research Experience

Coding Sky: A Web App to Help Users Understand How to Code *University of Glasgow*
Master's Dissertation *Oct 2021 - Dec 2021*
- Investigated learning challenges faced by novice programmers and translated them into system design decisions.
- Developed an educational web application that facilitates learning core programming concepts through conceptual explanations, interactive quizzes, and immediate feedback mechanisms.
- Built and integrated a Unity-based serious game designed to visualize abstract programming structures through interactive 3D gameplay.
- Conducted user evaluation and reflected on usability, learning effectiveness, and limitations.

Digital Fabrication and Parametric Construction Project *Qingdao University of Technology*
Team Lead, Sole Designer *Apr 2018 - May 2018*
- Developed a parametric modeling workflow for generating a wave-form landscape wall system with controlled geometric variation.
- Utilized the parametric 3D models to simulate and compare two digital fabrication strategies: direct robotic arm construction versus laser-cut template-assisted positioning, focusing on constructability and geometric accuracy.
- Led a 12-member student team to fabricate a wave-form landscape wall segment using the laser-cut template-assisted construction method.
- Analyzed the role and limitations of digital construction aids in aligning virtual geometry with physical assembly.

Building and Construction Experiment: Full-Scale Pavilion Prototype *Qingdao University of Technology*
Team Lead, Sole Designer *Aug 2017 - Sept 2017*
- Selected as one of ten student-led projects through a competitive concept design review.
- Led a team of 12 students to refine the design and construct a full-scale architectural prototype.
- Conducted structural reasoning, material selection, and feasibility analysis under real-world constraints.
- Reflected on how full-scale construction influences human spatial perception and embodied interaction with built form.

Qingdao Architectural Construction Workshop 3.0 *Qingdao University of Technology*
Coordinator, Group Member *Apr 2017*
- Participated in an international workshop focusing on timber structures and architectural site analysis.
- Collaborated in an international team to rapidly design a small-scale observation pavilion and produce physical models.
- Assisted faculty with workshop setup, exhibition preparation, and on-site coordination.

Undergraduate Architectural Design Studio *Qingdao University of Technology*
Studio Coordinator, Teaching Assistant *Sept 2016 - June 2020*
- Assisted faculty in formulating studio design topics, including site selection and refinement of design objectives.
- Supported studio teaching and peer instruction, mentoring junior students in design methods and tools (approx. 16 students per year).
- Coordinated student group formation and studio exhibitions, supporting dissemination of design outcomes.
- Assisted with studio operations, including facilities management and online teaching organization during COVID-19.

Experience

Independent Developer *Rizhao, China*
Sole Development *Mar 2023 - Present*
- Conducted self-directed development of multiple software systems across web, mobile, and desktop platforms.
- Explored interactive systems, spatial interfaces, and cross-platform architectures through independent projects.
- Designed and implemented end-to-end applications, from problem formulation to deployment.
- Conducted early exploration of AR technologies through small-scale prototypes, including marker-based AR demos in Unity and room-scanning experiments using Swift.

Selected Projects

Desk AR
Oct 2025 - Nov 2025

- Developed a web-based workspace planner integrating a 3D editor with true-scale AR preview.
- Designed an interface for interacting with Three.js models, enabling object translation and rotation through both direct manipulation controls and precise numerical input of position and orientation.
- Investigated system constraints of WebXR-based AR presentation on iOS (Quick Look) and Android (Scene Viewer), and adopted Model Viewer as a unifying abstraction to ensure consistent cross-platform AR visualization.
- **Technologies:** TypeScript, Vue, Three.js, Model Viewer, WebXR.

Cycle It
Apr 2025 - Nov 2025

- Developed a cross-platform application for tracking usage cycles and predicting recurring events.
- Investigated interaction differences across devices with varying screen sizes and input modalities, and explored approaches for maintaining consistent user experience across platforms.
- Designed an adaptive UI navigation system that dynamically transitions between single-, dual-, and multi-column layouts based on screen width, enabling context-aware content presentation.
- **Technologies:** Flutter.

Mouse Steering Wheel
Feb 2025 - Mar 2025

- Implemented a real-time input mapping system converting mouse movement into virtual joystick signals.
- Investigated alternative interaction techniques for driving and simulation interfaces.
- **Technologies:** C#, WPF, vJoy.

Certifications

| 2018 | **Level 4 - Network Engineer**, National Computer Rank Examination (NCRE) | *China* |

Skills

Programming	C#, Python, HTML/CSS, JavaScript, Dart (Flutter)
Developer Tools	Git, VS Code, Visual Studio, Android Studio, Unity, Three.js, Vue, Django
Miscellaneous	3D Modeling, Hardware Troubleshooting
Languages	Mandarin (Native), English (Fluent), German (Basic)