Junke Zhao

zhao.junke0626@gmail.com | +1 (412) 390-9219
LinkedIn | Website

Education

Carnegie Mellon University Pittsburgh, PA
Master of Science, Computational Design August 2023 - May 2025
Thesis: CoFAB: An Integrated Human-AI Collaboration Prototyping and Fabrication System for Designers in Early Design Stages (Advisor: Joshua Bard)
Honors: Merit Scholarship

Southeast University Nanjing, China
Bachelor of Architecture, Architecture August 2018 - June 2023
Honors: Merit Scholarship 2021 & 2022, First Prize in National Competition of Steel Construction Innovation, First Prize in National Competition in Industrialized Building and Intelligent Construction, Top 100 in China Newer 2020

ETH Zurich Hybrid
Exchange Program, Architecture September 2019 - June 2020

Research Interest

Tangible Interaction, Personal Fabrication, Ubiquitous Computing, Computational Design

- My research explores design tools and advanced fabrication methodologies, aimed at democratizing digital manufacturing, reducing barriers to entry, and expanding the scope of material and spatial expression.
- My research investigates the design and implementation of adaptive, responsive and interactive systems within built environments and everyday artifacts, aiming to enhance user comfort, human abilities, and overall experience.

Research Experience

Department of Computer Science, The University of Texas at Dallas June 2025 - Present
Research Assistant | Advisor: Liang He, Te-Yen Wu(Florida State University) Richardson, TX

- Developed a comprehensive, multi-dimensional taxonomy that synthesizes current research on transformable furniture by integrating user profiles, domestic usage scenarios, and transformation mechanisms, through a systematic review of publications across multiple disciplines and domains **(Paper in progress)**
- Designed and implemented a structured research database and interactive platform that consolidates metadata on user needs, domestic usage scenarios, and transform mechanisms, enabling diverse users, including general users, designers, and researchers, to query and explore the system in real time, identify relevant design strategies, and review existing research progress.

School of Architecture, Carnegie Mellon University August 2024 - Jan 2025
Research Assistant| Advisor: Joshua Bard Pittsburgh, PA
Robotic Shaping and Plastering of Hardset Building Materials

- Designed specialized end effectors for robotic plastering—variable-angle scraper fixture and Realsense camera detection system; Developed corresponding automatic path generators in Grasshopper implementing linear paths, angle rotation, thickness-uniform cross paths, and automatic tool cleaning routines
- Executed manufacturing experiments with IRB-6700 robotic arm and optimized system performance; Conducted systematic testing using varied scraper orientations and path strategies to enhance single-execution quality; Managed experimental data collection and analysis for performance evaluation

- Implemented vision-based defect classification system using Arduino and Linux-connected Realsense cameras; Automated surface defect identification and remedial path generation for robotic plastering operations

School of Architecture, Southeast University September 2020 - July 2021
Research Assistant | Institute of Building Technology and Science Nanjing, China

- Conducted comprehensive post-occupancy evaluation (POE) of climate-adaptive design strategies for office building in Changzhou, China (hot summer/cold winter region); Validated effectiveness of transitional space design methods for indoor microclimate regulation
- Implemented systematic environmental monitoring using positioned sensors over one year; collected quantitative data on temperature, humidity, airflow, solar radiation, and other indoor environmental parameters across multiple seasons; conducted satisfaction surveys capturing occupant comfort data throughout the year
- Developed detailed thermal performance, daylighting, and natural ventilation simulation models in Rhino and ClimateStudio; compared predicted performance against measured data to validate design methodologies; created comprehensive visualizations characterizing environmental conditions across different building zones and seasons

Skills

Programming Languages:

- Python, C#, Grasshopper, Arduino,, ROS, Processing

Tools and Software:

- **Design and Creative:** Photoshop, Illustrator, InDesign, Figma, Adobe Premiere
- **Modeling and Visualization:** Rhinoceros 3D, Grasshopper, SolidWorks, AutoCAD, SketchUp, 3ds Max, Revit, D5 Render, Blender, Vray, Enscape
- **Interactive and Physical Computing Tools:** Arduino, Unity 3D, KiCAD, Particle, CURA, Laser Cutting, 3D printing, CNC machining, TouchDesigner
- **Research and Analysis**: ClimateStudio, Ecotect, GIS, Tableau

Language:

- English (fluent), Mandarin (native), Japanese (basic)

Professional Experience

Product Designer May 2024 - July 2024
DesignX Company Los Altos, CA

- Developed digital educational tools for a design camp for 90 K-12 kids using Figma and Adobe Illustrator, including 12 learning modules and 5 interactive tools
- Facilitated 90 kids in building their architecture design projects by assisting with their design process and assessing their understanding of design knowledge

Architectural Designer July 2022 - October 2022
Beijing Institute of Architectural Design (BIAD) Beijing, China

- Contributed to campus planning and facade design for Peking University's new Medical School campus, producing over 20 analysis diagrams with Adobe Suites, 5 renderings with Enscape and Vray, and 3 facade engineering drawings with AutoCAD
- Developed a Grasshopper script to rapidly modify facade arrangements and dimensions, increasing team modeling efficiency by approximately 60%