

# Li Wang

## PhD. Student

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🚩 Research Field: Computer Graphics, Human Computer Interaction

### Education

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**Master and PhD,** 2020 – 2026  
*Software Engineering, Department of Intelligence and Computing, Tianjin University*

**Bachelor,** *Measuring and Controlling Technologies and Instruments, School of Precision Instrument and Opto-electronics Engineering, Tianjin University* 2016 – 2020

### Profile

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- **Main research topic:** Material **appearance modeling** and **3D reconstruction** in the field of computer graphics.
- **Main achievements:** Using smartphones and smartpads to complete **high-quality material appearance reconstruction** and geometric modeling through **lightweight acquisition**.
- **Main technology stack:** PBR rendering technology, deep learning model (including Diffusion large model), neural implicit field (NeRF)
- **Other research experience:** Using a combination of **multiple devices** such as robotic arms, leap motion, and handwriting tablets to realize experiential teaching system research

### Publications

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**NFPLight: Deep SVBRDF Estimation via the Combination of Near and Far Field Point Lighting**  
SIGGRAPH Asia 2024 and ACM Trans. Graph.

**Li Wang**, Lianghao Zhang, Fangzhou Gao, Yuzhen Kang, and Jiawan Zhang\*

**DeepBasis: Hand-Held Single-Image SVBRDF Capture via Two-Level Basis Material Model**  
SIGGRAPH Asia 2023

**Li Wang**, Lianghao Zhang, Fangzhou Gao, and Jiawan Zhang\*

**MakeBronze: An interactive system to promote Chinese bronze culture in children through hands-on experience with lost-wax casting**

International Journal of Human-Computer Studies, 2024. (**First Author among students**)  
Minjing Yu, **Li Wang**, Mingxu Cai, Mengrui Zhang, Chun Yu, Xing-Dong Yang, Jiawan Zhang\*

**Deep SVBRDF Estimation from Single Image under Learned Planar Lighting**  
SIGGRAPH 2023

Lianghao Zhang, Fangzhou Gao, **Li Wang**, Minjing Yu, Jiamin Cheng, and Jiawan Zhang\*

**Transparent Object Reconstruction via Implicit Differentiable Refraction Rendering**  
SIGGRAPH Asia 2023

Fangzhou Gao, Lianghao Zhang, **Li Wang**, Jiamin Cheng, and Jiawan Zhang\*

**Single-image SVBRDF estimation with auto-adaptive high-frequency feature extraction**  
Computers & Graphics

Jiamin Cheng, **Li Wang**, Lianghao Zhang, Fangzhou Gao, Jiawan Zhang\*

## Projects

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### Material appearance and geometric reconstruction based on lightweight equipment acquisition

2022 – present

- Responsible for the research on **material appearance reconstruction** using **smartphones** as acquisition devices:
  - Facing the problem of high **ambiguity** under single measurement values, a method combining the **basis material model with deep learning** is proposed, and the spatial relationship is successfully used to improve the reconstruction quality.
  - Facing the contradiction between **acquisition efficiency** and **acquisition quality**, an acquisition scheme based on the combination of **near-field and far-field shooting** is proposed, which achieves high-quality results comparable to the **original method of 20 images** input using **only 2 images** as input.
- Participated in the reconstruction of material appearance using **smart pad** as acquisition devices:
  - Based on **LTC real-time planar light source rendering** technology, a single surface light source material acquisition that can learn light source patterns is proposed.
- Participated in the research of transparent object reconstruction using only **smartphones** as acquisition devices:
  - Based on the **neural SDF field technology**, proposed 2D reprojected object contour extraction, thereby realizing fully automatic transparent object reconstruction without calibration.

### Cultural heritage protection based on multi-device integration

2020 – 2021

Responsible for developing a safe, convenient, experiential teaching system for youths around **lost wax casting**, a representative production process of bronze ware, to promote the dissemination of Chinese bronze culture among young people. This system includes a **robotic arm**, leap motion, projector, drawing tablet and etc.

### Development of intelligent accompanying equipment based on six-axis sensor, Internship---Tianjin Xuanmiao Technology Co., Ltd.

2019 – 2020

As the **project leader**, I took the **six-axis sensor module** MPU6050 as the core to address the problem of posture changes of the person being cared for, and took into account issues such as miniaturization. I independently designed the **PCB circuit** and completed the entire process of device welding, **single-chip computer** and host computer program development.

## More Experience

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### Academic Reviewer

Reviewed SIGGRAPH, SIGGRAPH Asia, Chinagraph, IEEE Vis, etc.

### Management

Served as a tutor for the first class of the undergraduate, responsible for the daily management of students, for a term of one year

### Fund Application Writing

National Natural Science Foundation 2024 Project - Material Capture Topic; National Key R&D Program 2023 - Robotics Topic

### Teaching

Teaching Matlab, analog circuits, single-chip computers, etc., one-year term