

# Wei Pan

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Male, Date of Birth:1990/12/26

## Education

### Singapore University of Technology and Design

Singapore

*Ph.D*

*Sep 2013 – 2018*

Pillar of Engineering Product Development

Related courses: Modelling and Optimization; Probability and Statistics; Machine Learning; Algorithm and Data Structure, etc.

### Zhejiang University

Hangzhou, China

*B.Eng, 3.60/4.0*

*Aug 2009–July 2013*

Chu KoChen Honors College in Optical Engineering

Related courses: Advanced Mathematics; Signal Processing; Photonics; Physical Optics, etc.

## Research Interests

Machine Learning, Mesh Processing, Computational Geometry, Geometric Learning, Rapid Prototyping, Computer Aided Design, Algorithm and Optimization, Automation Design

## Publications

### Articles

1. Hao, J., Liu, J., Li, J., **Pan Wei**, et al. (2022). AI-enabled Automatic Multimodal Fusion of Cone-Beam CT and Intraoral Scans for Intelligent 3D Tooth-Bone Reconstruction and Clinical Applications. arXiv preprint arXiv:2203.05784.
2. Shuaijun Chen, Jinxi Wang, **Wei Pan**, Shang Gao, Meili Wang, Xuequan Lu. "Towards Uniform Point Distribution in Feature-preserving Point Cloud Filtering", arXiv:2201.01503, 2022.
3. Lei Lu, Zhaoyi Jia, **Wei Pan**, Qinghui Zhang, Mengya Zhang, and Jiangtao Xi. "Automated reconstruction of multiple objects with individual movement based on PSP", Optics Express, 2020
4. Chaofan Dai, **Wei Pan**, Xuequan Lu. "Segmentation Based Mesh Denoising" arXiv preprint arXiv:2008.01358, 2020.
5. **Wei Pan**, Yuanhao Gong, Wenming Tang, Jun Liu, Guoping Qiu. "HLO: Half-kernel Laplacian Operator for Surface Smoothing." Computer-Aided Design, 2020: 102807.
6. Wenming Tang, Yuanhao Gong, Kanglin Liu, Jun Liu, **Wei Pan**, Bozhi Liu, Guoping Qiu, "Gaussian Curvature Filter on 3D Mesh", arXiv preprint arXiv:2003.09178, 2020.
7. Iteratively weighted principal component analysis and orientation consistency for normal estimation in point cloud. Bo Wen, Bo Tao, **Wei Pan**, Guozhang Jiang. International Journal of Wireless and Mobile Computing 19 (3), 267-275.
8. **Wei Pan**, Yuanhao Gong, Guoping Qiu. "Parallel Curvature Filter for High Performance

- Image Processing.", International Workshop on Advanced Image Technology (IWAIT) 2019. Vol. 11049. International Society for Optics and Photonics, Singapore.
9. **Wei Pan**, Lujie Chen. "Transformation of LEGO Models.", Computer Aided Design and Applications, 2018
  10. **Wei Pan**, Lujie Chen. "Design of LEGO assembly transformation." in Proceedings of CAD'17, Okayama, Japan, 2017. (link)
  11. **Wei Pan**, Lujie Chen, and Stylianos Dritsas. "Pick-and-place process sequencing for transformation of rasterized 3D structures." Automation in Construction 75 (2017): 56-64. doi: j.autcon.2016.12.007
  12. **Wei Pan**, Lujie Chen. "Moving Sequence Generation Based on Hungarian Method for Pick-and-Place Process." page 47-52, in Proceedings of CAD'15, London, United Kingdom, 2015. (link)
  13. Si Guang Yuan, Eunice Sok Ping Leong, **Wei Pan**, Chan Choy Chum, and Yan Jun Liu. "Plasmon-induced transparency in coupled triangle-rod arrays." Nanotechnology 26, no. 2 (2014): 025201.

## Patents

1. (China Patent) 潘威, 刘帆, 曹玲, 卢盛林. 一种基于点集特征和区域连通性的快速三维数据清理方法. 2022.02.28
2. (China Patent) 唐雅茹, 潘威, 曹玲, 卢盛林. 一种基于曲率特征几何采样的三维数据配准方法. under 2022.03.31
3. (China Patent) 刘浩然, 潘威, 吕磊, 卢盛林. 一种基于相移轮廓术的高反射率物体三维重构方法, under 2022.02.28
4. (China Patent) Jun Liu, **Wei Pan**, Wenming Tang, Yuanhao Gong, Guoping Qiu. A kind of 3D imaging scanners and scan method. CN109141281A, 2019.01.04.
5. (China Patent) Wenming Tang, Yuanhao Gong, **Wei Pan**, Jun Liu, Guoping Qiu. A kind of mechanical arm hand and eye calibrating method and device based on Three-dimension object recognition. CN109702738A. 2019.05.03.
6. (China Patent) **Wei Pan**, Yuanhao Gong, Wenming Tang, Jun Liu, Guoping Qiu. Triangle gridding filtering method and terminal device based on Laplace operator. CN110120069A. 2019.08.13.
7. (China Patent) **Wei Pan**, Chaofan Dai, Xuequan Lu. Triangular mesh segmentation and denoising method. CN112085750A. 2020.12.15.
8. (China Patent) **Wei Pan**, Shenglin Lu, Ling Cao. High-precision point cloud normal calculation method. CN112802077A. 2021.05.14.
9. (China Patent) **Wei Pan**. Triangular mesh filtering method and device, electronic equipment and storage medium. CN113178013A. 2021.07.27.
10. (China Patent) **Wei Pan**, Jingyang Ye, Hao Chen, Jinzhao You, Shenglin Lu. High-precision three-dimensional data real-time progressive rendering method and system. CN113269860A. 2021.08.17.

## Experience

**Collabrative Researcher**

Advisor: Prof. Takeo Igarashi

**Tokyo University, Tokyo, Japan**

Jan 2021 – Now

Knit-Pattern Retrieval and Classification based on data driven Pseudo-sketch Auto-generation; 3D Garment auto segmentation based on feature line generation.

**Senior R&D Researcher** **OPT Machine Vision Corp., Dongguan**  
*PI: 3D Metrology* *Jun 2019 – Now*

Work independently on 3D Metrology Platform: Sci3D Vision SDK; Structured-Light module development: system and software; Binocular match module: system and algorithm.

**Research Fellow** **South China University of Technology, Guangzhou**  
*Advisor: Prof. Zhang Xianmin* *Oct 2019 – Now*

Working collaboratively on algorithms in 3D Metrology, including algorithms in 3D data (point cloud, range image and triangle mesh) processing and analysis, geometric measurements and computations, computer graphics etc.

**Research Fellow** **Shenzhen University, Shenzhen**  
*Advisor: Prof. QIU Guoping* *Jun 2018 – May 2019*

3d learning-based vision algorithm: Build a 3D shape database by 3D scanning; learning algorithms on both mesh and point cloud; Pick and place process by UR robotic arm

**PhD** **SUTD, Singapore**  
*Advisor: Prof. CHEN Lujie* *Sep. 2013 – Mar. 2018*

Algorithm and software development for rapid prototyping and fabrication. Developed algorithms for sequencing optimization of rasterized model transformations; Rapid prototyping of ribs and slices, etc.

**Research Intern** **IMRE, A\*STAR, Singapore**  
*Advisor: Dr. LIU Yanjun* *May 2014 – Sep. 2014*

Tested the plasmon-induced transparency (PIT) phenomena on a gold triangle-rod hybrid nanostructure arrays using transmission spectroscopy and FDTD simulation

**Thesis Project** **Zhejiang University, Hangzhou**  
*Advisor: Prof. KUANG Cuifang* *Jan. 2013 – July 2013*

Software development in C++ for STORM microscope

**Visiting Student** **University of Alberta, Edmonton**  
*Advisor: Prof. Zubin Jacob* *Sep. 2012 – Dec. 2012*

Survey on Super Resolution Fluorescence Microscopy: STED and STORM.

**Research Intern** **Kuang-Chi Institute, Shenzhen**  
*Advisor: Dr. GUO Jie* *July 2012 – Aug. 2012*

Antenna's design and simulation with COMSOL and CST using metamaterials; Kuang-Chi Young Talents Awards

**Optical Design Competition** **Zhejiang University, Hangzhou**  
*Project Leader* *Feb. 2012 – July 2012*

Fabricated a laser spying device to restore sound signals from the spots reflected from vibrated glass windows, and programmed in Labview to locate the source of sound; Awarded the only first prize

**Zhejiang Xinmiao Talents Program** **Zhejiang University, Hangzhou**  
*Advisor: Prof. LIU Chong* *Feb. 2012 – May 2013*

Tested aerosol's absorbing coefficient by laser and resonator and fix the length of resonator based on Piezoelectric ceramics with LABVIEW

**China Undergraduate Innovation Program** **Zhejiang University, Hangzhou**  
*Advisor: Dr. LIN Shisheng* *Mar. 2011 – June 2012*

Mass production of one-layer large graphene on 10-micron scale with the taping method

## Awards

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- President's Graduate Fellowship, Singapore, 2013-2018 (every year)
- Outstanding Graduate Student, Zhejiang University, China, 2013
- Kuang-Chi Young Talents Awards, China, 2012
- 1st Prize Winner in Optical Design Competition in Zhejiang University, China, 2012
- First-Class Scholarship for Outstanding Students, Zhejiang University, China, 2009
- Excellent Student Awards, Zhejiang University, China, 2009-2013 (every year)
- Scholarship for Excellent Students in Sports and Arts, Zhejiang University, China, 2009-2013 (every year)

## Skills

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**Languages:** Mandarin (Native), English (Fluent), Japanese (Elementary)

**Programming:** C++, Python, MATLAB, PyTorch, TensorFlow

**Interests:** Badminton, Soccer, Swimming

## Activities

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**Teaching Assistant:** System and Controls (30.101) SUTD, EPD, 2015, Lecturer: Prof. Shaohui Foong

**Teaching and Lab Assistant:** Digital Systems Lab (30.110) SUTD, EPD, 2014, Lecturer: Prof. Jiajia Chen, Prof. Yuen Chau

**Volunteering English Teacher:** Teaching English in Thang Long Middle School, Hanoi, Vietnam, June 2015

**Vice Captain of Soccer Team:** Initiated and co-established SUTD Diraja soccer team.