ZHANG Zhiyuan

School of Computing and Information Systems
Singapore Management University (SMU)
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Education

PhD, National University of Singapore, Singapore, 2015

Master of Engineering, Harbin Institute of Technology, China, 2008

Bachelor of Engineering, Yanshan University, China, 2005

Academic Appointments

Assistant Professor of Computer Science (Practice), School of Computing and Information Systems, SMU, Jul 2023 - Present

Associate Faculty, Singapore Institute of Technology, Singapore, Aug 2022 - Jan 2023

Assistant Professor, Zhejiang University, China, Oct 2020 - Feb 2023

Research Fellow, Singapore University of Technology and Design, Singapore, Oct 2017 - Sep 2020

Research Assistant, Hong Kong Polytechnic University, China, Oct 2008 - Oct 2009

Other Positions and Affiliations

Director, Algorithm Research, Litemaze Research Ltd., China, Mar 2023 - Jun 2023

Staff Researcher, Lenovo Group Ltd., China, Aug 2014 - Nov 2017

Awards and Honors

Outstanding Reviewer, European Conference on Computer Vision, 2024

High-Level Talents, Ningbo, 2020

High-Level Talents, Nanshan District, Shenzhen, 2016

Overseas High-Caliber Personnel, Shenzhen, 2016

Professional Memberships

Member, China Computer Federation, 2023

Member, Institute of Electrical and Electronics Engineers, 2022

RESEARCH

Research Interests

Computer Vision, Computer Graphics, Pattern Recognition

Research and Project Areas

3D point cloud analysis, understanding, classification, semantic segmentation, semi-supervised / unsupervised leaning, pattern recognition and biometrics.

Publications

Journal Articles [Refereed]

An adaptive network fusing light detection and ranging height-sliced bird’s-eye view and vision for place recognition, by ZHENG, Rui; JIANG, Zuo; YE, Yibin; REN, Yang; ZENG, Hui; LI, Junwei; ZHANG, Zhiyuan. (2024). *Engineering Applications of Artificial Intelligence, 137* 1-13. https://doi.org/10.1016/j.engappai.2024.109230 (Published)

RIConv plus plus : Effective Rotation Invariant Convolutions for 3D Point Clouds Deep Learning, by ZHANG, Zhiyuan; HUA, Binh-Son; YEUNG, Sai-Kit. (2022). *International Journal of Computer Vision, 130* (5), 1228-1243. https://doi.org/10.1007/s11263-022-01601-z (Published)

Machine learning integrated design for additive manufacturing, by JIANG, Jingchao; XIONG, Yi; ZHANG, Zhiyuan; ROSEN, David W.. (2022). *Journal of Intelligent Manufacturing, 33* (4), 1073-1086. https://doi.org/10.1007/s10845-020-01715-6 (Published)

Efficient 3D dental identification via signed feature histogram and learning keypoint detection, by ZHANG, Zhiyuan; ONG, Sim Heng; ZHONG, Xin; FOONG, Kelvin W. C.. (2016). *Pattern Recognition, 60* 189-204. https://doi.org/10.1016/j.patcog.2016.05.007 (Published)

Symmetry Robust Descriptor for Non-Rigid Surface Matching, by ZHANG, Zhiyuan; YIN, KangKang; FOONG, Kelvin W. C.. (2013). *Computer Graphics Forum, 32* (7), 355-362. https://doi.org/10.1111/cgf.12243 (Published)

Conference Proceedings

RISurConv : Rotation invariant surface attention-augmented convolutions for 3D point cloud classification and segmentation, by ZHANG, Zhiyuan; YANG, Licheng; XIANG Zhiyu. (2024.0). *Proceedings of the 18th European Conference on Computer Vision (ECCV 2024) : Milan, Italy, September 29 - October 4,* (pp. 93-109) Cham: Springer Nature. https://doi.org/10.1007/978-3-031-73390-1_6 (Published)

Test-time augmentation for 3D point cloud classification and segmentation, by VU, Tuan-Anh; SARKAR, Srinjay; ZHANG, Zhiyuan; HUA, Binh-Son; YEUNG, Sai-Kit. (2024.0). *Proceedings of the 2024 International Conference on 3D Vision (3DV), Davos, Switzerland, March 18-21,* (pp. 1543-1553) Los Alamitos, CA: IEEE. https://doi.org/10.1109/3DV62453.2024.00153 (Published)

3D dental biometrics: Transformer-based dental arch extraction and matching, by ZHANG Zhiyuan; ZHONG Xin. (2023.0). *Proceedings of the 2023 IEEE Conference on Artificial Intelligence (CAI), Santa Clara, California, USA, June 5-6*

, (pp. 139-140) Los Alamitos, CA: IEEE. https://doi.org/10.1109/CAI54212.2023.00067 (Published)

The impact of the COVID-19 pandemic on retrenchment, vaccinations, and global happiness, by NG, Wei Shen Jackson; SASIKUMAR, Jullisha; WONG, Yok Hung; KHAN, Osama Rasheed; NG, Zhi Hui Vivian;

AL-SUDANI, Sahar; GUO, Huaqun; ZHANG, Zhiyuan; WANG, Zhengkui. (2023.0). *Proceedings of 2023 15th International Conference on Developments in eSystems Engineering (DeSE), Baghdad & Anbar, Iraq, January 9-12,* (pp. 280-286) Baghdad & Anbar, Iraq: IEEE. https://doi.org/10.1109/DeSE58274.2023.10100157 (Published)

CVFNet: Real-time 3D object detection by learning cross view features, by GU, Jiaqi; XIANG, Zhiyu; ZHAO, Pan; BAI, Tingming; WANG, Lingxuan; ZHAO, Xijun; ZHANG, Zhiyuan . (2022.0). *Proceedings of the 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Kyoto, Japan, October 23-27,* (pp. 568-574) Kyoto, Japan: https://doi.org/10.1109/iros47612.2022.9981087 (Published)

3D dental biometrics: Automatic pose-invariant dental arch extraction and matching, by ZHONG, Xin; ZHONG, Zhiyuan. (2021.0). *Proceedings of the 2020 25th International Conference on Pattern Recognition, Milan, Italy, 2021 January 10-15,* (pp. 6524-6530) Milan, Italy: IEEE. http://doi.org/10.1109/icpr48806.2021.9412829 (Published)

Global context aware convolutions for 3D point cloud understanding, by ZHANG, Zhiyuan; HUA, Binh-Son; CHEN, Wei; TIAN, Yibin; YEUNG, Sai-Kit. (2020.0). *Proceedings of the 2020 International Conference on 3D Vision (3DV), Fukuoka, Japan, November 25-28* , (pp. 210-219) Fukuoka, Japan: IEEE. http://doi.org/10.1109/3dv50981.2020.00031 (Published)

ShellNet: Efficient point cloud convolutional neural networks using concentric shells statistics, by ZHANG, Zhiyuan; HUA, Binh-Son; YEUNG, Sai-Kit . (2019.0). *Proceedings of the 2019 IEEE/CVF International Conference on Computer Vision (ICCV), Seoul, Korea, October 27 - November 2,* (pp. 1607-1616) Seoul, Korea: IEEE. https://doi.org/10.1109/iccv.2019.00169 (Published)

Rotation invariant convolutions for 3D point clouds deep learning, by ZHANG, Zhiyuan; HUA, Binh-Son; ROSEN, David W.; YEUNG, Sai-Kit. (2019.0). *Proceedings of the 2019 International Conference on 3D Vision (3DV), Quebec, Canada, September 16-19,* (pp. 204-213) Quebec City, QC, Canada: IEEE. https://doi.org/10.1109/3dv.2019.00031 (Published)

An efficient partial shape matching algorithm for 3D tooth recognition, by ZHANG, Zhiyuan; ZHONG, Xin; ONG, Sim Heng; FOONG, Kelvin W. C.. (2013.0). *The 15th International Conference on Biomedical Engineering, ICBME 2013, Singapore, December 4-7,* (pp. 785-788) Cham: Springer. https://doi.org/10.1007/978-3-319-02913-9_202 (Published)

Improved spin images for 3D surface matching using signed angles, by ZHANG, Zhiyuan; ONG, Sim Heng; FOONG, Kelvin. (2012.0). *Proceedings of the 2012 19th IEEE International Conference on Image Processing, Orlando, Florida, USA, September 30 - October 3,* (pp. 537 -540) Orlando, FL, USA: IEEE. https://doi.org/10.1109/icip.2012.6466915 (Published)

Multi-view ear recognition based on moving least square pose interpolation, by LIU, Heng; ZHANG, David; ZHANG, Zhiyuan. (2009.0). *Emerging Intelligent Computing Technology and Applications: 5th International Conference, ICIC 2009, Ulsan, South Korea, September 16-19: Proceedings,* (pp. 1085-1097) Cham: Springer. https://doi.org/10.1007/978-3-642-04020-7_116 (Published)

Multi-view ear recognition based on B-Spline pose manifold construction, by ZHANG, Zhiyuan; LIU, Heng. (2008.0). *Proceedings of the 7th World Congress on Intelligent Control and Automation, Chongqing, China, 2008 June 25-27,* (pp. 2416-2421) Chongqing, China: IEEE. https://doi.org/10.1109/WCICA.2008.4593302 (Published)

Research Grants

Singapore Management University

Advanced Data Augmentations for 3D Point Cloud Deep Learning, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): ZHANG Zhiyuan, 2023, S$123,440

Other Institutions

Key Technology Research and Industrialization of Small Appliances Assembling by Dual-arm Robot, Ningbo “2025 S&T Megaprojects”, Ningbo Science and Tecnology Bureau PI (Project Level): ZHANG Zhiyuan, CNY900,000

TEACHING

Teaching Areas

Data Structures & Algorithms
Programming Fundamentals II
Object Oriented Programming

Courses Taught

Singapore Management University

Undergraduate Programmes :

- Data Structures and Algorithms
- Object Oriented Programming
- Programming Fundamentals II

UNIVERSITY SERVICE

Singapore Management University

Committee Member, IS Regular Admissions Interview, Apr 2024 - May 2024

Committee Member, School Evaluation Committee, Apr 2024 - May 2024

EXTERNAL SERVICE – PROFESSIONAL

Reviewer Journal Article, Pattern Recognition, Applied Soft Computing Journal, Engineering Applications of Artificial Intelligence, Neurocomputing, IEEE Transactions on Emerging Topics in Computational Intelligence, 2024

Reviewer Conference Paper, ECCV, 3DV, ICRA, MMM, WACV, 2024

Reviewer Conference Paper, ICCV, SIGGRAPH Asia, WACV, ICRA, 2023

Reviewer Journal Article, Pattern Recognition, Applied Soft Computing Journal, IEEE Transactions on Image Processing, IEEE Transactions on Emerging Topics in Computational Intelligence, 2023

Committee Member, Technical Committee, ICCCS, 2023

Committee Member, Course, SIGGRAPH Asia, 2019

Program Organizer, Tutorial, IROS, 2018