Zhixin YANG
Professor

State Key Laboratory of Internet of Things for Smart City, and Department of Electromechanical Engineering, Faculty of Science and Technology
University of Macau

Academic Qualification

- Ph.D. in Industrial Engineering and Engineering Management, **Hong Kong University of Science and Technology**, Hong Kong SAR, China
- Direct PhD Program in Mechanical Design, **Huazhong University of Science and Technology**, China
- B.Eng. in Mechanical Engineering, **Huazhong University of Science and Technology**, China

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Working Experience

- ***Assistant Professor / Associate Professor / Professor***, Department of Electromechanical Engineering, Faculty of Science and Technology, University of Macau, 02/2003- Present.
- ***General Deputy Director***, The Education and Research Institute of University of Macau in Hengqin, 09/2025 – Present.
- ***General Director***, The Preparatory Office for Hengqin New Campus of University of Macau, 09/2025 – Present.
- ***Deputy Director***, Zhuhai UM Science and Technology Institute, University of Macau, 12/2023-12/2025.
- Director, Research Services and Knowledge Transfer Office, University of Macau, 06/2018 – 06/2022.
- ***Assistant Dean***, Faculty of Science and Technology, University of Macau, 05/2016 – 05/2018.
- ***Post-Doctorate Fellow / Senior Research Engineer***, Data Storage Institute, A*STAR, Singapore, 06/2000-01/2003

Honors and Awards

- Awarded with the **Incentive Program for Research Excellence in University of Macau**, 07/2025.
- **Grand Prize Award (Supervisor), 18th National Challenge Cup** – Chinese College Students of Academic Science and Technology "**Olympic**" event，12/2023.
- Academic Advisor, supervised team to win the **First Prize in Chang-Feng National Big Data Mining Competition**, and **Outstanding Instructor Award**, organized by Chinese Institute of Electronics
- **First Prize Award (Supervisor), 17th National Challenge Cup**，UM Team (Weixiang Liang, Shiyun Liang, Ziqin Ding, Zhixin Yang (Supervisor)). ***The only team in Macau won the first prize***, 03/2022.
- **The State Scientific Innovation and Pioneer Award,** As a State-level honour in China for science and technology, this award is for recognizing Chinese citizens who have made remarkable contributions to scientific research, key equipment development, and science popularizations. 2017.
- **First Prize Award & Outstanding Instructor Award**, National Chang-Feng Big Data Mining Contest, organized by the Chinese Institute of Electronics. 10/2021.
- **Winner of CVPR2020 UG2+ Challenge** (Supervisor). Won first place in the IEEE-CVPR2020 UG2+ competition in the Challenge: "(Semi-)Supervised Object Detection in Low Light Condition", essential technology for intelligent safety monitoring. Joint team formed by UM and Chinese Academy of Science. 06/2020.
- **Second place in CVPR2019 UG2+ competition** (Supervisor), a well-known global intelligent vision challenge, Joint team formed by UM and Chinese Academy of Science. 06/2019.
- **First Prize Award** (Supervisor), **16th National Challenge Cup**, (The only champion in Macao)). 11/2019.
- First Prize in Southern-China competition, and Nominee prize in global finals (Teacher), S.-T. Yau High School Science Award (Mathematics), , 12/2017.
- Research Excellence Award of Faculty of Science and Technology, University of Macau, 08/2017.
- First prize award (Supervisor), The Fourth Central South China, Hong Kong and Macau Undergraduate's Creative Design and Manufacturing Competition, 2009.
- Third prize award (Supervisor), 11th National Challenge Cup – National College Science and Technology Competition, 2009.
- Macau expert and coach of Macau team, 38th World Professional Skill Competition, Finland, Manufacturing Trade, 2008.
- Champion (Macau expert and coach of Macau team), The 2nd Guangzhou/Hong Kong/Macau Youth Skills Competition – Manufacturing Trade, 2004.

Teaching

B.Sc. Courses

1. Computer Aided Design (EMEB221) (MECH403)
2. Computer Aided Manufacturing (MECH412)
3. Communication System and Data Network (MECH484)
4. Advanced Manufacturing (EMEB350)
5. Industrial Data Management (EMEB361)
6. Facility Management (EMEB380)
7. Design Project (EMEB410)

M.Sc. Courses

1. Prognostics and Health Management of Engineering Systems (EMEN7039)
2. Computer-Integrated Design and Manufacturing (IMEM006)
3. Product Design and Management (ELME735)
4. Modeling and Analysis of Production Systems (EMEN7036)
5. Introduction to Research (IMEM002)
6. Master Thesis (ELME799)

Ph.D. Courses

1. Advanced Topic in Electromechanical Engineering I (ELME803)
2. Doctoral Thesis (ELME899)

Research

Research Interests

Prof. Yang's work focuses on prognostic health monitoring and robotics technologies for intelligent safety monitoring in smart cities. Fundamental research studies data-driven condition monitoring of electromechanical equipment in the Internet of Things environment with a focus on multimodal signals processing, intelligent diagnosis, and resilience dynamic monitoring. Critical research on robotics includes machine vision-based perception, 3D shape recognition, and agile robot control for safety monitoring applications.

Research areas include:

- Intelligent fault diagnosis and prognostic health management of engineering system
- Machine Vision based robot perception and control for safety monitoring
- Safe service guarantee of distributed heterogeneous urban equipment

Recent Research Projects

- Principal Investigator, **Macau Key Project, funded by the Science and Technology Development Fund, Macau**, *Research and application of multi-modal sensing and data- driven intelligent process planning technology for industrial robot*, (FDCT/0018/2019/AKP); MOP6,000,000, 01/2020- 01/2023.
- PI, National Key Project, joint funded by FDCT/Macau and National Science Foundation of China (FDCT-NSFC), Regulation of Cross-scale High-dynamic Ultra-precision Motion for Electron Beam Inspection of Wafer Defect, 0092/2024/AFJ, MOP2,071,500, 31/10/2024 - 30/10/2027.
- National Key Project, joint funded by FDCT/Macau and Minister of Science and Technology of China (FDCT-MoST), Research and Application for Intelligent Detection of Packaging Quality about Semiconductor Devices, 0075/2023/AMJ, MOP1,540,000, 1/12/2023 - 30/11/2025.
- PI, Macau Science and Technology Development Fund, Development of a Safety Guaranteed Surgical Navigation System Based on Globally Optimal Registration Algorithm, 0003/2023/RIB1, MOP2,059,000, 1/12/2023 - 30/11/2026.
- PI, Guangdong Science and Technology Department, Safety evaluation and maintenance management of key on board electromechanical equipment of Rail Transit in Great Bay Area. 2020B1515130001; RMB2,000,000; 10/2020-9/2024.
- PI, Zhuhai Science and Technology Department, Integrated Elevator safety monitoring big data system and application in smart community; (ZUMRI-HF-011-2021); RMB3,200,000; 02/2022 – 01/2025.
- Principal Investigator, Jointly funded by Macau Science and Technology Development Fund of Macau and Guangdong Science and Technology Department, *Intelligent Diagnostic and Evaluation Technology for Service Performance of High Voltage Cable of EMU in Urban Rail Transit,* (FDCT/0008/2019/AGJ); MOP1,144,000, 01/2020-01/2022.
- SubProject PI, Intelligent Safety Monitoring and Maintenance of Electromechanical Equipment of undersea Tunnel in HK-Macao-Guangdong Bridge (Sub-Proj 2.3) (Grant no. 2019YFB1600700); RMB800,000 in 510,000,000; 01/2020-01/2023.
- Principal Investigator, Macau Science and Technology Development Fund, Health Monitoring and Prediction of Electromechanical Equipment Towards Internet of Intelligent Things, MOP1,000,000; 03/2018- 03/2021.
- PI, National Key Project, joint funded by FDCT/Macau and Minister of Science and Technology of China, Intelligent Monitoring, Reliability Evaluation and Power Generation Anticipation of Wind Turbine; (FDCT/015/2015/AMJ) ; MOP927,000, 03/2017-03/2020.
- Research committee of UM (MYRG-GRG2025-00299-FST), Research on Failure Mechanism and Fault Diagnosis of Offshore Wind Turbine u nder Transient Condition Excitation, Principal investigator, 1/01/2026-31/12/2027, MOP320,000.
- Research committee of UM (MYRG-GRG2024-00299-FST), Key Technologies for Intelligent Fault Diagnosis of Offshore Wind Turbines under Fluctuating Operating Conditions Principal investigator, 1/01/2025- 31/12/2026, MOP520,000.

Selected Recent Publications

Refereed Journal Papers

1. **Li, J.**, Zhen, C., Wu, Z., Chen, H., Wang, X.B, **Yang, Z.X.***, (2025). Review of fault diagnosis for rotating machinery: Prior knowledge integrated data-driven methods are promising. ***Mechanical Systems and Signal Processing***.
2. Li, J., Wang, X. B., Chen, H., **Yang, Z. X.*** (2025). Physical-Knowledge-Guided and Interpretable Deep Neural Networks for Gear Fault Severity Level Diagnosis. ***IEEE Transactions on Industrial Informatics***.
3. Li, J., Chen, H. Wang, X., **Yang, Z.X**.*. (2024-10). A comprehensive gear eccentricity dataset with multiple fault severity levels: Description, characteristics analysis, and fault diagnosis applications. ***Mechanical Systems and Signal Processing***, Volume 224, 2025, 112068.
4. Wang, X., Chen, H., Zhao, J. Song, C., Zhang, Y., **Yang, Z.X**.*, Wong, P.K. (2024-07). Wind Turbine Fault Diagnosis for Class-Imbalance and Small-Size Data Based on Stacked Capsule Autoencoder. ***IEEE Transactions on Industrial Informatics***, 2024, 20(11), pp. 12694–12704. doi: 10.1109/TII.2024.3424211 (early access).
5. Chen, H. Wang, X., Li, J., **Yang, Z.X**.*. (2024-06). Dynamic Focusing Network for Semisupervised Mechanical Fault Diagnosis of Rotating Machinery**.** ***IEEE Transactions on Industrial Informatics***. 2024, 20(10), pp. 11575–11586. DOI: 10.1109/TII.2024.3409443 (early access)
6. Tu, Z., Luo, Z., Li, M., Wang, J., **Yang, Z. X**., & Wang, X. (2024). Adaptive spectrum amplitude modulation method for rolling bearing fault frequency determination. Measurement Science and Technology, 35(11), 116108.
7. Zhang, M., Zhou, Z., Sun, N., Geng, H., Zhao, J., Yang, Z.X*. (2025-02). Bioinspired Reference Model and Fully Actuated System Approach-Based Neuroadaptive Control for Uncertain Active Suspension Systems With Input Dead Zones. ***IEEE Transactions on Industrial Electronics***, doi: 10.1109/TIE.2025.3536552
8. Wang, J., Liu, Y., and **Yang, Z. X.***. (2025-01). SF-Pose: Semantic-Fusion Six Degrees of Freedom Object Pose Estimation via Pyramid Transformer for Industrial Scenarios. ***IEEE Transactions on Automation Science and Engineering***, doi: 10.1109/TASE.2025.3529511.
9. Liu, Y., Liu, S., Chen, B., **Yang, Z.X.***, Xu, S. (2025-02). Fusion-Perception-to-Action Transformer: Enhancing Robotic Manipulation with 3D Visual Fusion Attention and Proprioception. ***IEEE Transactions on Robotics***, vol 41, pp. 1553–1567 doi: 10.1109/TRO.2025.3539193.
10. Liang, W., Liu, Y., Wang, J. and Yang, Z.X.*. (2025-01). Trajectory Progress-Based Prioritizing and Intrinsic Reward Mechanism for Robust Training of Robotic Manipulations. ***IEEE Transactions on Automation Science and Engineering***, doi: 10.1109/TASE.2024.3513354.
11. Wang, J., Luo, L., Liang, W., **Yang, Z.X.*** (2024-05). OA-Pose: Occlusion-aware monocular 6-DoF object pose estimation under geometry alignment for robot manipulation, ***Pattern Recognition***, Volume 154, 2024, 110576.
12. Chen, H. Wang, X., **Yang, Z.X**.*, Li, J. (2024-05). Privacy-preserving intelligent fault diagnostics for wind turbine clusters using federated stacked capsule autoencoder. ***Expert Systems with Applications***, Volume 254, 2024, pp.1-12. 124256.
13. Chen,Y., Chen, S., **Yang, Z.X.*,** Wu, E. (2024-05). Learning self-target knowledge for few-shot segmentation, ***Pattern Recognition***, Volume 149, 2024, 110266.
14. Chen,Y., Jiang, R., Zheng, Y., Sheng, B., **Yang, Z.X.**, Wu, E. (2024). Dual Branch Multi-Level Semantic Learning for Few-Shot Segmentation, ***IEEE Transactions on Image Processing***, vol. 33, pp. 1432-1447, 2024, doi: 10.1109/TIP.2024.3364056.
15. Xi, R-D, Ma, T-N, Xiao, X, **Yang, Z-X.*** (2024-04). Design and implementation of an adaptive neural network observer–based backstepping sliding mode controller for robot

manipulators. *Transactions of the Institute of Measurement and Control*. 2024, Vol. 46(6) 1093-1104. doi:10.1177/01423312231190169.
16. Xu, S.Q., Li, F., Song, Z., Fang, J., Wang, S.F., **Yang, Z.X.*** (2024-04). Multi-Sem Fusion: Multimodal Semantic Fusion for 3D Object Detection. ***IEEE Transactions on Geoscience and Remote Sensing***. 2024, vol 62, pp. 1–14, 5703114.
17. Lyu, L., Cao, W., Ren, X. Wu, E., Yang, Z.* (2024-02). Efficient odd–even multigrid for pointwise incompressible fluid simulation on GPU. Visual Computer (2024), pp1-17. https://doi.org/10.1007/s00371-024-03264-y.
18. Lyu, L., Ren, X., Cao, W., Zhu, J., Wu, E., & **Yang, Z. X**. (2024). Wavelet Potentials: An Efficient Potential Recovery Technique for Pointwise Incompressible Fluids. In ***Computer Graphics Forum*** (p. e15023).
19. Wong, P. K., Li, W., Ma, X., **Yang, Z.**, Wang, X., & Zhao, J. (2024). Adaptive event-triggered dynamic output feedback control for nonlinear active suspension systems based on interval type-2 fuzzy method. ***Mechanical Systems and Signal Processing***, 212, 111280.
20. Chen, H., Wang, X. -B. and **Yang, Z.X.*** (2023-12). A Novel Rotating Machinery Fault Diagnosis System Using Ensemble learning Capsule Autoencoder, IEEE Sensors Journal, PP(99):1-1 doi: 10.1109/JSEN.2023.3331837.
21. Chen, Y., Zhang, D., Zheng, Y., Yang, Z.X., Wu, E., Zhao, H. (2023-10). Boosting Video Object Segmentation via Robust and Efficient Memory Network. IEEE Transactions on Circuits and Systems for Video Technology.
22. Chen, H., Wang, X.B., **Yang, Z.X.***. (2023-09). Semi-Supervised Self-Correcting Graph Neural Network for Intelligent Fault Diagnosis of Rotating Machinery. ***IEEE Transactions on Instrumentation & Measurement***. vol. 72, pp. 1-11, 2023, Art no. 3536611.
23. Wang, J.K, Liang, W.X. Wang, S., **Yang, Z.X.***. (2023). An Adaptive Image Enhancement Approach for Safety Monitoring Robot under Insufficient Illumination Condition. ***Computers In Industry***. Vol 147, 2023, 103862..
24. Wang, D. and **Yang, Z.X*** (2023). Self-Supervised Point Cloud Understanding via Mask Transformer and Contrastive Learning. ***IEEE Robotics and Automation Letters***, vol. 8, no. 1, pp. 184-191, Jan. 2023. (SCI).
25. **Yang, Z.X.**, Li, C.S., Wang, X.B., Chen, H. (2023). Intelligent fault monitoring and diagnosis of tunnel fans using a hierarchical cascade forest. ***ISA Transactions***, doi:10.1016/j.isatra.2022.10.037. (SCI)
26. Zhao, J., Zhu, Y., Wong, PK, Li, WF, **Yang, Z.X**., Li PS., Song CH. (2023). Non-fragile robust output feedback control of uncertain active suspension systems with stochastic network-induced delay. *Nonlinear Dynamics*. (SCI).
27. Chen, H., Wang, X.B and **Yang, Z. X***. (2022). Fast Robust Capsule Network With Dynamic Pruning and Multiscale Mutual Information Maximization for Compound-Fault Diagnosis. ***IEEE/ASME Transactions on Mechatronics***, 2022, doi: 10.1109/TMECH.2022.3214865. (SCI)
28. Wang, D., Tang, L., Wang, X., Luo, L., and **Yang, Z.X.*** (2022). Improving deep learning on point cloud by maximizing mutual information across layers, ***Pattern Recognition***, 131(2022) 108892. (SCIE).
29. Wang, D., Tang, L., Zhu, L., **Yang, Z.X.*** (2022). Mutual Information Maximization based Similarity Operation for 3D Point Cloud Completion Network. ***IEEE Signal Processing Letters***, vol. 29, pp 1217-1221. (SCIE)
30. Xi, R., Xiao, X., Ma, T., **Yang, Z.X.*** (2022). Adaptive Sliding Mode Disturbance Observer based Robust Control for Robot Manipulators Towards Assembly Assistance. ***IEEE Robotics and Automation Letters***, vol. 7, no. 3, pp. 6139-6146, July 2022. (SCIE)
31. Liu X, **Yang Z-X***, Xu Z and Yan X (2022). NeuroVI-based new datasets and space attention network for the recognition and falling detection of delivery packages.

Frontier in Neurorobotics. 16:934260. doi: 10.3389/fnbot.2022.934260 (SCIE)

32. Liu, X., **Yang, Z.***, Hou, J., and Huang, W. (2022). Dynamic Scene's Laser Localization by NeuroIV-based Moving Objects Detection and LIDAR Points Evaluation. ***IEEE Transactions on Geoscience and Remote Sensing***, vol. 60, pp. 1-14, 2022, Art no. 5230414. (SCIE)
33. Ma, C.G., Li, J.M., Zhang, N., Bu, F., **Yang, Z.X.** (2022). Open-Circuit Radial Stray Magnetic Flux Density Based Noninvasive Diagnosis for Mixed Eccentricity Parameters of Interior Permanent Magnet Synchronous Motors in Electric Vehicles. ***IEEE Transactions on Industrial Electronics***. 70, no. 2, pp. 1983-1992, Feb. 2023, doi: 10.1109/TIE.2022.3165250. 2022. (SCIE)
34. Cao, W., Lyu, L., **Yang, Z.X.***, Wu, E. (2022). An Energy Constraint Position Based Dynamics with Corrected SPH Kernel. ***Science China Information Sciences***, 66, 112108 (2023). (SCI).
35. Yang, Z. X., Rong, H. J., Angelov, P. P., and **Yang, Z.X***. (2022). Statistically Evolving Fuzzy Inference System for Non-Gaussian Noises. ***IEEE Transactions on Fuzzy Systems***, vol. 30, no. 7, pp. 2649-2664, July 2022, doi: 10.1109/TFUZZ.2021.3090898. (SCIE)
36. Yu, G., Wong, P. K., Huang, W., Zhao, J., Wang, X. -B., and **Yang, Z. -X.** (2022). Distributed Adaptive Consensus Protocol for Connected Vehicle Platoon With Heterogeneous Time-Varying Delays and Switching Topologies. ***IEEE Transactions on Intelligent Transportation Systems***, vol. 23, no. 10, pp. 17620-17631. (SCIE).
37. Hang, W., Wong, P.K., Zhao, J., Yang, Z.X, **Yang, Z.X.** (2022-07). Observer-based robust gain-scheduled control for semi-active air suspension systems subject to uncertainties and external disturbance. ***Mechanical Systems and Signal Processing***, Vol 173, 2022, 109045. (SCIE)
38. Liang, S., Xi, R., Xiao, X., **Yang, Z.X***. (2022). Adaptive Sliding Mode Disturbance Observer and Deep Reinforcement Learning Based Motion Control for Micropositioners. *Micromachines* 13(3):458. (SCIE).
39. Yang, Z.-X., Rong, H.-J., Wong, P.K., Angelov, P., Vong, C.M., Chiu C. W., and **Yang, Z.-X**. (2022). A Novel Multiple Feature-Based Engine Knock Detection System using Sparse Bayesian Extreme Learning Machine. ***Cognitive Computation***, 2022, 1-24. (SCIE).
40. Chen, Y.D., Hao, C.Y., **Yang, Z.X.*** Wu, E. (2022). Fast Target-aware Learning for Few-shot Video Object Segmentation. ***Science China Information Sciences***, 65, 182104 (2022). (SCIE)
41. Liang, Z., Wang, Z., Zhao, J., Wong, P.K., **Yang, Z.,** and Ding, Z. (2022). Fixed-Time and Fault-Tolerant Path-Following Control for Autonomous Vehicles With Unknown Parameters Subject to Prescribed Performance***. IEEE Transactions on Systems, Man, and Cybernetics: Systems*** (SCIE)
42. Liang, Z., Wang, Z., Zhao, J., Wong, P.K., **Yang, Z**., and Ding, Z. (2022-10). Fixed-Time Prescribed Performance Path-Following Control for Autonomous Vehicle With Complete Unknown Parameters, **IEEE Transactions on Industrial Electronics**, 2022, doi: 10.1109/TIE.2022.3210544.
43. Yang, Z-X[1], **Yang, Z-X[1]**, Rong, H.J. (2022-02). Adaptive Nonparametric Evolving Fuzzy Controller for Uncertain Nonlinear Systems with Dead Zone. *Evolving Systems*, 13, 637–651 (2022).
44. Liu, B., Liu, X., Yang, Z., Wang, C.C.L., (2022). Concise and Effective Network for 3D Human Modeling from Orthogonal Silhouettes. ***The ASME Journal of Computing and Information Science in Engineering***, 1–17.
45. Luo L., Tang, L.L., Lui, R., Zhang, X., and **Yang, Z.X.***. (2021). Multi-modality

Learning for Non-rigid 3D Shape Retrieval via Structured Sparsity Regularizations. ***IEEE Sensors Journal***, 21(20): 22985-22994, 2021. (SCIE)

46. **Yang, Z.X.,** Yu, G., Zhao, J., Wong, P. K., & Wang, X. (2021). Online Equivalent Degradation Indicator Calculation for Remaining Charging-discharging Cycle Determination of Lithium-ion Batteries. ***IEEE Transactions on Vehicular Technology***, 70(7): 6613 – 6625, July (SCIE).
47. Wang, X. B., Luo, L. Q., Tang, L.L., **Yang, Z.X**.*. (2021). Automatic Representation and Detection of Fault Bearings in In-wheel Motor under Variable Load Conditions. ***Advanced Engineering Informatics***. 49(101321):1-10. *doi: 10.1016/j.aei.2021.101321* (SCIE).
48. Feng, Z., Ming, M. Ling, J., Xiao, X., **Yang, Z.X**., Wan, F. (2021). Fractional delay filter based repetitive control for precision tracking: Design and application to a piezoelectric nanopositioning stage. ***Mechanical Systems and Signal Processing***, 164(108249): 1915-1930, *:/10.1016/j.ymssp.2021.108249.* (SCIE).
49. Yang, Z. X., Rong, H.J., Wong, P. K., Angelov, P., **Yang, Z.X**. and Wang, H. (2021). Self-Evolving Data Cloud-based PID-like Controller for Nonlinear Uncertain Systems, ***IEEE Transactions on Industrial Electronics***. Vol 68, Issue 5, pp. 4508-4518. doi: 10.1109/TIE.2020.2982094. (SCI).
50. Ng, K. K. H., Chen, C. H., Lee, C. K. M., Jiao, J., & **Yang, Z.X**. (2021). A systematic literature review on intelligent automation: Aligning concepts from theory, practice, and future perspectives. ***Advanced Engineering Informatics****, 47*, 101246. doi: https://doi.org/10.1016/j.aei.2021.101246. (SCIE).
51. Wang, D.Y., Zhou, L.J., **Yang, Z.-X.*,** Cui, Y. Wang, L., Jiang, J., Guo, L., (2020). A New Testing Method for the Dielectric Response of Oil-immersed Transformer, ***IEEE Transactions on Industrial Electronics***, Vol. 67, no.12, pp. 10833-10843. 2020. (SCI)
52. Zhang, P.-B., **Yang, Z.X.*** (2020). A new learning paradigm for random vector functional-link network: RVFL+, ***Neural Networks***, Vol. 122, (2020), Pp 94-105. ISSN 0893-6080. Doi: 10.1016/j.neunet.2019.09.039. (SCI)
53. Tang, L.L**.**, Chen, K., Wu, C., Hong, Y., Jia, K., **Yang, Z.X.*** (2020). Improving Semantic Analysis on Point Clouds via Auxiliary Supervision of Local Geometric Priors. ***IEEE Transactions on Cybernetics***, 52(6): 4949-4959. *doi: 10.1109/TCYB.2020.3025798* (SCIE)
54. Rong H.-J., **Yang Z. X**. and Wong P. K. (2020-09). Robust and Noise-insensitive Recursive Maximum Correntropy-based Evolving Fuzzy System, ***IEEE Transactions on Fuzzy Systems***, vol. 28, no. 9, pp. 2277-2284. Doi: 10.1109/TFUZZ.2019.2931871.
55. Zhao, Y.H., Zhang, Z.Q., Li, Z.H., **Yang, Z.X**., Dehghani-Sanij AA, Xie, S.Q. (2020). An EMG-Driven Musculoskeletal Model for Estimating Continuous Wrist Motion. ***IEEE Trans Neural Syst Rehabil Eng***. 2020 Dec; 28(12):3113-3120.
56. Tang, L.L, **Yang, Z.X.***, Jia, K. (2019). Canonical Correlation Analysis Regularization: An Effective Deep Multi-View Learning Baseline for RGB-D Object Recognition. ***IEEE Transactions on Cognitive and Developmental Systems*****,** 11. No. 1, pp 107-118. Mar. 2019. (SCIE)
57. Liang, P., Deng, C., Wu, J., **Yang, Z.X.,** Zhu, J., Zhang, Z. (2019). Compound Fault Diagnosis of Gearboxes via Multi-label Convolutional Neural Network and Wavelet Transform, ***Computers in Industry***, Vol 113, 2019, 103132, DOI:/10.1016/j.compind.2019.103132. (SCI)
58. Bao, R.J., Rong H.J., **Yang, Z.X**., Chen, B.D. (2019). A Novel Prognostic Approach for RUL Estimation with Evolving Joint Prediction of Continuous and Discrete States. ***IEEE Transactions on Industrial Informatics***. vol. 15, no. 9, pp.

5089-5098, Sep. 2019. (SCI).

59. Liang, P., Deng, C., Wu, J., Li, G., **Yang, Z.X.**, and Wang, Y. (2019). Intelligent Fault Diagnosis Via Semi-Supervised Generative Adversarial Nets and Wavelet Transform, in ***IEEE Transactions on Instrumentation and Measurement***. 69(7), pp 4659-4671. 2019.
60. **Yang, Z.X.**, Wang, X.B., Wong, P.K. (2018). Single and Simultaneous Fault Diagnosis with Application to a Multistage Gearbox: A Versatile Dual-ELM Network Approach. ***IEEE Transactions on Industrial Informatics,*** 14, No. 12, pp. 5245-5255, 2018. (SCI)
61. Zhong, J.H., Wong, P.K., **Yang, Z.X**. (2018). Fault diagnosis of rotating machinery based on multiple probabilistic classifiers. ***Mechanical Systems and Signal Processing***, vol. 108, 2018, pp 99-114. (SCI)
62. Wang, X.B., **Yang, Z.X.***, Yan, X.A. (2018). Novel Particle Swarm Optimization-Based Variational Mode Decomposition Method for the Fault Diagnosis of Complex Rotating Machinery. ***IEEE/ASME Transactions on Mechatronics***, Vol. 23, no. 1, pp.68-79, 2018. (SCI) (**Highly cited papers***) Highly Cited Paper
63. Zhang, P.B. and **Yang, Z.-X.*** (2018). A Novel AdaBoost Framework with Robust Threshold and Structural Optimization. ***IEEE Transactions on Cybernetics***, 01/2018, Vol.48, Issue 1, pp.64-76. (SCI)
64. Ren, X.H., Lyu, L., He, X. W., Cao, W., **Yang, Z.X**., Sheng, B., Zhang, Y.C, Wu, E.H. (2018). Biorthogonal Wavelet Surface Reconstruction Using Partial Integrations. ***Computer Graphics Forum***, *Pacific Graphics 2018,* Vol 37(2018), Num 7, pp 1-12.
65. Wong P. K., Gao X. H., Wong K. I., Vong C. M., **Yang Z.X**. (2018). Initial-Training-Free Online Sequential Extreme Learning Machine Based Adaptive Engine Air-fuel Ratio Control, *International Journal of Machine Learning and Cybernetics*, 10, pages2245–2256 (2019).
66. **Yang, Z.X.**, Tang, L.L. Zhang, K. Wong, P.K. (2018). Multi-view CNN Feature Aggregation with ELM Auto-Encoder for 3D Shape Recognition. ***Cognitive Computation***, Vol. 10, Issue 6, pp 908–921. (SCIE)
67. Wang, X.B., **Yang, Z.X.***, Wong, P.K., Deng, C. (2018-12). Novel paralleled extreme learning machine networks for fault diagnosis of wind turbine drivetrain. ***Memetic Computing***. 11, 127-142 (2019). DOI: 10.1007/s12293-018-0277-2 (SCIE)

Services

Professional Services

1. Organizing Chair, 2019 IEEE International Conference on Industrial Engineering & Engineering Management (**IEEE IEEM2019**), Macau, 15-18 Dec 2019.
2. Keynote Speaker & Session Moderator, Sub-forum of China Science and Technology Summit 2021. Macau, 03/12/2021.

3. Keynote Speaker, “Multiscale Urban Electromechanical Infrastructure Safety Monitoring Towards IoTs”, 5th Inter Conf. of Maintenance Engineering (IncoME-V 2020), 2020 Annual Conf. of the Centre for Efficiency and Performance Engineering Network (IncoME-CEPE2020), 10/2020.
4. Keynote Speaker, Urban Public Safety Monitoring Promoted by Internet of Things Technology, Smart City Session of the Annual National Conference of China Association of Science and Technology. Qingdao, Shangdong, 10/2019.
5. Keynote Speaker, Internet of Things Technology Leveraging Urban Public Safety, IEEE Macau Forum on Smart City and Safety, IEEE-Macau. Macau 05/2019.
6. Session Moderator, Sub-forum of Smart City, China Science and Technology Summit 2019.Macau, 07/2019.

Service on Organizing of Industry-University-Research and Knowledge Transfer Activities for the University and Macau

- Vice Chairman of organizing committee, **Macau Innovation and Entrepreneurship Competition**, discovering potential talents from local, mainland and international participants, recommending for main national competition. Annual event from 2018 to present.
- Coordinator, organizing UM’s scientific achievements and projects from relevant academic units to attend the “Macau Industrial Exhibition”, 2019-2022.
- Coordinator, organizing the University’s R&D achievements and projects to attend the “**Macau Science Week and Macau Science and Technology Forum, Macau International Trade and Investment Fair”**. 2018-2021.
- Session Moderator, Sub-forum of Smart City, **China Science and Technology Summit 2019**, 07/2019.
- Vice Chairman of Macau Organizing Committee, 34th China Adolescents Science and Technology Innovation Contest Macau, 07/2019.
- Coordinator, organizing the scientific achievements and projects from relevant academic units to attend the “National Scientific Popularization Exhibition of cutting-edge technology in the past two decades”. Macao, 2019.
- Invited Keynote Speaker, The First Cross-Strait, Hong Kong and Macao Young Entrepreneurs Innovation and Entrepreneurship Development Forum, Qingdao, 11/2019.
- Chairman of Organizing Committee of Macau Team, formed by 16 local innovative research projects recommended by universities and industries, Guangzhou, May 2015 and May 2016.

University Services

- Member, Academic Council of Faculty of Science and Technology, 2003 – present.
- Secretary, Research Committee of University of Macau, 06/2018– 06/2022.
- Board Member, UMTech Corp of University of Macau. 10/2019 – 01/2023;
- Member, University Affairs Coordination Committee, 06/2018 – 06/2022.
- Member, Panel of Academic Equipment, 06/2018- 06/2022.
- Member and secretary, University Research Ethics Review Panel, 06/2019-06/2022.

- Member, University Health and Safety Committee, 06/2018 – 06/2022
- Coordinator in UM, Organizing Committee of UM's innovative research projects for promotion in the annual "China Innovation and Technology Fair"; and acted as Chairman in Macau Organization Committee, 05/2015 – 06/2022..
- Coordinator, organizing the University's R&D achievements and projects to attend the "Macau Science Week and Macau Science and Technology Forum", and "Macau Industrial Exhibition, 2018-2022.

Selected Community Service

1. The series of "**Distinguished Chinese Scientist Talk**", hosted by Macau Asso for Promotion Sci and Tech (MAPST) and China Asso of Sci and Tech (CAST), and co-organized by local organizations, which popularized science to more than 10,000 students and citizens.
    - Chair of Organizing Committee, 2011-2025.
    - Member of Organizing Committee, 2007-2010.
    - Moderator, 2004-2006.
2. Organizing Macau Scientific Delegate to Attend the Annual Meeting of China Association of Science and Technology (CAST),
3. Member of Advisory Committee (Macau), Referee for National Young Scientific Innovation Contest, 04/2017-present.
4. Organizing Macau Delegation to attend the Annual Meetings and Investigations of Guangdong Association of Science and Technology (GDAST), 07/2017-present.

Contact Details

Department of Electromechanical Engineering
Faculty of Science and Technology
University of Macau
Macau SAR, China

Room: N21-1013
Telephone: (853) 8822-4456
Fax: (853) 8822-8314
Email: zxyang@um.edu.mo