Curriculum Vitae

Ning TAN

E-mail: tann5@mail.sysu.edu.cn

Research interests

Soft/Continuum Robotics, Medical Robotics, Robot Control, Robot Learning

Professional Experience

Associate professor, PhD supervisor
School of Computer Science and Engineering
Sun Yat-sen University, Guangzhou, China
Sep 2018 – Now

Research fellow
Engineering Product Development Pillar
Singapore University of Technology and Design, Singapore
Feb 2018 – Sep 2018

Research fellow
Advanced Robotics Centre & Department of Biomedical Engineering
National University of Singapore, Singapore
May 2016 – Nov 2017

Postdoctoral research fellow
Lee Kuan Yew Centre for Innovative Cities
Singapore University of Technology and Design, Singapore
Dec 2015 – May 2016

Postdoctoral research fellow
SUTD-MIT International Design Centre
Singapore University of Technology and Design, Singapore
May 2014 – Dec 2015

Research assistant
CNRS FEMTO-ST Institute & Université de Franche-Comté,
Besançon, France
May 2010 – Dec 2013

Education

PhD Automatic Control and Micro-Mechatronic Systems
May 2010 – Dec 2013
CNRS FEMTO-ST Institute & Université de Franche-Comté,
Besançon, France
Thesis *Calibration of micro and nanorobotic systems: Contribution of influential parameters to the geometric accuracy*

M.E. Software Engineering
Sep. 2007 – Dec. 2009
Sun Yat-sen University, Guangzhou, China

B.E. Information Engineering
Sep. 2003 – Jun. 2007
Guangdong University of Technology, Guangzhou, China

Publications

Journal Papers

1. Peng Yu, **Ning Tan***, Zhiyan Zhong, and Shen Liao, "Model-Less Kinematic Control of Redundant Manipulators with Simultaneous Joint-Physical-Limit and Joint-Angular-Drift Handling", ***ISA Transactions***, 2023.
2. Zhuosong Fu, Yunong Zhang, and **Ning Tan**, "Gradient-Feedback ZNN for Unconstrained Time-Variant Convex Optimization and Robot Manipulator Application", ***IEEE Transactions on Industrial Informatics***, 2023.
3. Xin Wang and **Ning Tan***, "Cerebellum-Inspired Model-Free Tracking Control and Visual Servoing of a Rigid-Flexible Hybrid Robotic Endoscope with RCM Constraints", ***IEEE Transactions on Industrial Electronics***, 2023.
4. Peng Yu, **Ning Tan***, and Mingzhi Mao, "Position-Based Visual Servo Control of Dual Robotic Arms with Unknown Kinematic Models: A Cerebellum-Inspired Approach", ***IEEE/ASME Transactions on Mechatronics***, 2023.
5. **Ning Tan**, Peng Yu, and Wenka Zheng, "Uncalibrated and Unmodeled Image-Based Visual Servoing of Robot Manipulators Using Zeroing Neural Networks", ***IEEE Transactions on Cybernetics***, 2023.
6. Yuxin Liu, Xi Chen, Ye Liang, Hao Song, Peng Yu, Shunmin Guan, Zijian Liu, Anqi Yang, Minghui Tang, Yajing Zhou, Ying Zheng, Zhilun Yang, Lelun Jiang, Jufang He, **Ning Tan**, Bingzhe Xu, Xudong Lin, "Ferromagnetic flexible electronics for brain-wide selective neural recording", ***Advanced Materials***, vol. 35, no. 6, 2208251, 2023.
7. Peng Yu, **Ning Tan***, and Zhiyan Zhong, "Comparative Studies and Performance Analysis on Neural-Dynamics-Driven Control of Redundant Robot Manipulators with Unknown Models", ***Engineering Applications of Artificial Intelligence***, vol. 117, Part A, 2023, 105528.
8. Jinjin Guo, **Ning Tan**, and Yunong Zhang, "General ELLRFS-DAZN Algorithm for Solving Future Linear Equation System Under Various Noises", ***Neurocomputing***, 2022.
9. **Ning Tan**, Peng Yu, Mao Zhang, and Changsheng Li, "Towards Unified Adaptive Teleoperation Based on Damping ZNN for Robotic Manipulators with Unknown Kinematics", ***IEEE Transactions on Industrial Electronics***, vol. 70, no. 9, pp. 9227-9236, 2022.
10. Zanyu Tang, **Ning Tan**, and Yunong Zhang, "Velocity-Layer Zhang Equivalency for Time-Varying Joint Limits Avoidance of Redundant Robot Manipulator", ***IET Control Theory & Applications***, 2022.
11. **Ning Tan**, Peng Yu, Zhaohui Zhong, and Yunong Zhang, "Data-Driven Control of Continuum Robots Based on Discrete Recurrent Neural Networks", ***IEEE Transactions on Industrial Informatics***, vol. 19, no. 5, pp. 7088-7098, 2023.
12. Binbin Qiu, Jinjin Guo, Song Yang, Peng Yu, and **Ning Tan***, "A Novel Discretized ZNN Model for Velocity-Layer Weighted Multi-Criteria Optimization of Robotic Manipulators with Multiple Constraints", ***IEEE Transactions on Industrial Informatics***, vol. 19, no. 5, pp. 6717-6728, 2023.
13. **Ning Tan**, Chaoyuan Li, Peng Yu, and Fenglei Ni, "Two Model-Free Schemes for Solving Kinematic

Tracking Control of Redundant Robot Manipulators Based on CMAC Networks", ***Applied Soft Computing***, vol. 126, pp. 1-12, 2022.

14. **Ning Tan**, Peng Yu, Shen Liao, and Zhenglong Sun, "Recurrent Neural Networks as Kinematics Estimator and Controller for Redundant Manipulators Subject to Physical Constraints", ***Neural Networks***, vol. 153, pp. 64-75, 2022.
15. **Ning Tan**, Peng Yu, Zhiyan Zhong, and Fenglei Ni, "A New Noise-Tolerant Dual-Neural-Network Scheme for Robust Kinematic Control of Robotic Arms with Unknown Models", ***IEEE/CAA Journal of Automatica Sinica***, vol. 9, no. 10, pp. 1778–1791, 2022.
16. **Ning Tan**, Peng Yu, and Fenglei Ni, "New Varying-Parameter Recursive Neural Networks for Model-Free Kinematic Control of Redundant Manipulators with Limited Measurements", ***IEEE Transactions on Instrumentation and Measurement***, vol. 71, 7502514, 2022.
17. Keqi Wang, Tundong Liu, Yunong Zhang, and **Ning Tan**, "Discrete-Time Future Nonlinear Neural Optimization with Equality Constraint Based on Ten-Instant ZTD Formula", ***Neurocomputing***, vol. 488, pp. 444-456, 2022.
18. **Ning Tan**, Zixiao Ye, Peng Yu, and Fenglei Ni, "A Dual Fuzzy-Enhanced Neurodynamic Scheme for Model-Less Kinematic Control of Redundant and Hyperredundant Robots", ***IEEE Transactions on Fuzzy Systems***, vol. 30, no. 10, pp. 4409-4422, 2022.
19. **Ning Tan**, Zhaohui Zhong, Peng Yu, Zhan Li, and Fenglei Ni, "A Discrete Model-Free Scheme for Fault Tolerant Tracking Control of Redundant Manipulators", ***IEEE Transactions on Industrial Informatics***, vol. 18, no. 12, pp. 8595-8606, 2022.
20. **Ning Tan**, Peng Yu, and Fenglei Ni, "A Cerebellum-Inspired Network Model and Learning Approaches for Solving Kinematic Tracking Control of Redundant Manipulators", ***IEEE Transactions on Cognitive and Developmental Systems***, vol. 15, no. 1, pp. 150-162, 2022.
21. **谭宁**, "智能控制与计算智能课程的思政元素挖掘", ***计算机教育***, no. 326(02), pp. 34-36, 2022.
22. Binbin Qiu, Xiao-Dong Li, Jinjin Guo, and **Ning Tan**, "New Jerk-Level Configuration Adjustment Schemes Applied to Constrained Redundant Robots", ***IEEE Transactions on Industrial Informatics***, vol. 18, no. 4, pp. 2528-2538, 2022.
23. Min Yang, Yunong Zhang, **Ning Tan**, and Haifeng Hu, "Concise Discrete ZNN Controllers for End-Effector Tracking and Obstacle Avoidance of Redundant Manipulators", ***IEEE Transactions on Industrial Informatics***, vol. 18, no. 5, pp. 3193-3202, 2022.
24. Min Yang, Yunong Zhang, **Ning Tan**, and Haifeng Hu, "Explicit Linear Left-and-Right 5-Step Formulas with Zeroing Neural Network for Time-Varying Applications", ***IEEE Transactions on Cybernetics***, vol. 53, no. 2, pp. 1133-1143, 2023.
25. Qian Gao, **Ning Tan**, and Zhenglong Sun, "A Hybrid Learning-based Hysteresis Compensation Strategy for Surgical Robots", ***International Journal of Medical Robotics and Computer Assisted Surgery***, vol. 17, no. 4, pp. 1-17, 2021.
26. **Ning Tan** and Peng Yu, "Robust Model-Free Control for Redundant Robotic Manipulators Based on Zeroing Neural Networks Activated by Nonlinear Functions", ***Neurocomputing***, 2021.
27. **Ning Tan**, Mingwei Huang, Peng Yu, and Tao Wang, "Neural-Dynamics-Enabled Jacobian Inversion for Model-Based Kinematic Control of Multi-Section Continuum Manipulators", ***Applied Soft Computing***, 2021.
28. Min Yang, Yunong Zhang, Haifeng Hu, **Ning Tan**, and Mingzhi Mao, "7-Instant Discrete-Time Synthesis Model Solving Future Different-Level Linear Matrix System via Equivalency of Zeroing Neural Network", ***IEEE Transactions on Cybernetics***, 2021.
29. **Ning Tan**, Peng Yu, Xinyu Zhang, and Tao Wang, "Model-Free Motion Control of Continuum Robots Based on a Zeroing Neurodynamic Approach", ***Neural Networks***, vol. 133, no. 2021, pp. 21-31, 2020.
30. Qing Xie, Tao Wang, Shengda Yao, Zhipeng Zhu, **Ning Tan**, Shiqiang Zhu, "Design and Modeling of a Hydraulic Soft Actuator with Three Degrees of Freedom", ***Smart Materials and Structures***, vol. 29, no. 12, 2020.
31. Quanquan Liu, Xiaoyi Gu, **Ning Tan**, and Hongliang Ren, "Soft Robotic Gripper Driven by Flexible Shafts for Realizing Simultaneous Grasping and In-hand Cap Manipulation", ***IEEE Transactions on Automation Science and Engineering***, 2020.
32. **Ning Tan**, Abdullah Aamir Hayat, Rajesh Elara Mohan, and Kristin Wood, "A Framework for Taxonomy and Evaluation of Self-Reconfigurable Robotic Systems", ***IEEE Access***, vol. 8, no. 1, pp. 13969-13986, 2020.
33. Yunong Zhang, Yihong Ling, Shuai Li, Min Yang, and **Ning Tan***, "Discrete-time zeroing neural network for

solving time-varying Sylvester-transpose matrix inequation via exp-aided conversion", ***Neurocomputing***, vol. 386, pp. 126-135, 2020.

34. **Ning Tan**, Zhenglong Sun, Rajesh Elara Mohan, Nishaan Brahmananthan, Srinivasan Venkataraman, Ricardo Sosa, and Kristin Wood, "A System-of-Systems Bio-Inspired Design Process: Conceptual Design and Physical Prototype of a Reconfigurable Robot Capable of Multi-Modal Locomotion", ***Frontiers in Neurorobotics***, vol. 13, article 78, 2019.
35. **Ning Tan**, Nishaan Brahmananthan, Rajesh Elara Mohan, Veerajagadheswar Prabakaran, "Inspiration from Games and Entertainment Artifacts: A Rising Paradigm for Designing Mechanisms and Algorithms in Robotics", ***Frontiers in Robotics and AI***, vol.6, no. 3, pp. 1-13, 2019.
36. **Ning Tan**, Xiaoyi Gu, and Hongliang Ren, "Pose Characterization and Analysis of Soft/Continuum Robots Subjected to Modeling Uncertainties Based on Interval Arithmetic", ***IEEE Transactions on Automation Science and Engineering***, vol. 16, no. 2, pp. 570-584, 2019.
37. **Ning Tan**, Xiaoyi Gu, and Hongliang Ren, "Design, Characterization and Applications of a Novel Soft Actuator Driven by Flexible Shafts", ***Mechanism and Machine Theory***, vol. 122, pp. 197-218, 2018.
38. **Ning Tan**, Xiaoyi Gu, and Hongliang Ren, "Simultaneous Robot-World, Sensor-Tip, and Kinematics Calibration of an Underactuated Robotic Hand with Soft Fingers", ***IEEE Access***, vol. 6, no. 1, pp. 22705-22715, 2017.
39. Masataka Fuchida, Thejus Pathmakumar, Rajesh Elara Mohan, **Ning Tan**, Akio Nakamura, "Vision Based Perception and Classification of Mosquitoes Using Support Vector Machine", ***Applied Sciences***, vol. 7, no. 51, pp. 1-12, 2017.
40. **Ning Tan** and Hongliang Ren, "Positioning evaluation of tendon-driven flexible manipulators based on interval analysis", ***Electronics Letters***, vol. 52, no. 21, pp. 1748-1749, 2016.
41. Fuchida Masataka, Rajesh Elara Mohan, **Ning Tan**, Nakamura Akio, and Thejus Pathmakumar, "Terrain Perception in a Shape Shifting Rolling-Crawling Robot", ***Robotics***, 5(4), 19, 2016.
42. **Ning Tan**, Mohan Rajesh Elara, and Karthikeyan Elangovan, "Scorpio: A Biomimetic Reconfigurable Rolling-Crawling Robot", ***International Journal of Advanced Robotic Systems***, vol. 13, no. 5, 2016.
43. **Ning Tan**, Mohan Rajesh Elara, Shaohui Foong, Masaki Yamakita, Masami Iwase, Shoshiro Hatakeyama, Norihiro Kamamichi, Libo Song, You Wang, and Qiuguo Zhu, " IDC Robocon: A Transnational Teaming Competition for Project-Based Design Education in Undergraduate Robotics", ***Robotics***, vol. 5, no. 3, 2016.
44. **Ning Tan**, Mohan Rajesh Elara, and Akiko Watanabe, "Towards a Framework for Robot-inclusive Environments", ***Automation in Construction***, vol. 69, pp. 68-78, 2016.
45. **Ning Tan**, Cédric Clévy, Guillaume J. Laurent, and Nicolas Chaillet, "Compressive Sensing-Based Metrology for Micropositioning Robots Characterization", ***IEEE Robotics and Automation Letters (RA-L)***, vol. 1, no. 2, pp. 638-645, 2016.
46. **Ning Tan**, Cédric Clévy, Guillaume J. Laurent, Patrick Sandoz, and Nicolas Chaillet, "Accuracy Quantification and Improvement of Serial Micropositioning Robots for In-Plane Motions", ***IEEE Transactions on Robotics (T-RO)***, vol. 31, no. 6, pp. 1497-1507, 2015.
47. **Ning Tan**, Cédric Clévy, and Nicolas Chaillet, "Calibration of Nanopositioning Stages", ***Micromachines***, vol. 6, no. 12, pp. 1856-1875, 2015.
48. Mohan Rajesh Elara, **Ning Tan***, Katrine Tjoelsen, and Ricardo Sosa, "Designing the robot inclusive space challenge", ***Digital Communications and Networks***, vol. 1, no. 4, pp. 267-274, 2015.
49. Shunsuke Nansai, Mohan Rajesh Elara, **Ning Tan***, Nicolas Rojas, and Masami Iwase, "Dynamic Modeling and Nonlinear Position Control of a Quadruped Robot with Theo Jansen Linkage Mechanisms and a Single Actuator", ***Journal of Robotics***, vol. 2015, Article ID 315673, 15 pages, 2015. doi:10.1155/2015/315673.
50. **Ning Tan**, "Calibration for accuracy improvement of serial manipulators based on compressed sensing", ***Electronics Letters***, vol. 51, no. 11, pp. 820-822, 2015.
51. **Ning Tan**, Nicolas Rojas, Mohan Rajesh Elara, Vincent Kee, and Ricardo Sosa, "Nested Reconfigurable Robots: Theory, Design, and Realization", ***International Journal of Advanced Robotic Systems***, 2015, DOI: 10.5772/60507.
52. Arnab Sinha, **Ning Tan**, Mohan Rajesh Elara, "Terrain Perception for a Reconfigurable Biomimetic Robot using Monocular Vision", ***Robotics and Biomimetics***, vol. 1, no. 23, 2014.
53. **Ning Tan**, Cédric Clévy, and Nicolas Chaillet, "Performance analysis and characterization of micro-nanopositioning systems", ***Electronics Letters***, vol. 50, no. 24, pp. 1853-1855, 2014.
54. Yunong Zhang, Yiwen Yang, **Ning Tan**, Binghuang Cai, "Zhang neural network solving for time-varying

full-rank matrix Moore–Penrose inverse", ***Computing***, vol. 92, no. 2, pp. 97-121, 2011.

55. Yunong Zhang, Dongsheng Guo, and **Ning Tan**, "Optimal-structure determination of power-activation feed-forward neural net", ***Computer Engineering and Applications***, vol. 47, no. 2, pp. 29-31, 2011. (in Chinese)
56. Yunong Zhang, **Ning Tan**, Zhiguo Tan, and Jun Chen, "Quadratic-optimization based self-motion planning with no target-configuration assigned and verified via PA10 simulations", ***Journal of Jinan University (Natural Science)***, vol. 31, no. 3, pp. 229-234, 2010. (in Chinese)
57. Yunong Zhang, **Ning Tan**, Zhan Li, and Jinhui Mo, "Common nature of learning in BP and Hopfield-type neural networks solving an underdetermined system of linear equations", ***Acta Scientiarum Naturalium Universitatis Sunyatseni***, vol. 49, no. 2, pp. 1-8, 2010. (in Chinese)
58. Yunong Zhang, Kene Li, and **Ning Tan**, "An RBF neural network classifier with centers, variances and weights directly determined", ***Computing Technology and Automation***, vol. 28, no. 3, pp. 5-9, 2009. (in Chinese)
59. **Ning Tan**, "The computer-simulation study of CDMA systems", ***Journal of the Graduates, Sun Yat-Sen University (Natural Sciences, Medicine)***, vol. 30, no. 1, pp. 93-110, 2009. (in Chinese)

International Conferences

1. **Ning Tan**[#,*], Peng Yu[#], and Kai Huang, "Predefined-Time Convergent Motion Control for Heterogeneous Continuum Robots", in Robotics: Science and Systems (***RSS***) XIX, Daegu, Republic of Korea, Jul 10-14, 2023.
2. **Ning Tan**, Ruikun Hu, and Yang Liu, "A Competition-Based Distributed Scheme for Solving Multi-Robot Cooperative Pursuit Problems", in: IEEE International Conference on Robotics and Biomimetics (***ROBIO***), Xishuangbanna, China, December 5-9, 2022. (**Robotica Best Paper Finalist**)
3. Xin Wang, Peng Yu, Mingzhi Mao, and **Ning Tan***, "A Cerebellum-Inspired Model-Free Kinematic Control Method with RCM Constraint", in: The 29th International Conference on Neural Information Processing (***ICONIP***), New Delhi, India, November 22-26, 2022.
4. **Ning Tan**, Wenka Zheng, Xinyu Zhang, and Fenglei Ni, "Adaptive Neural Networks for Image-Based Visual Servoing with Uncertain Parameters", in: International Joint Conference on Neural Networks (***IJCNN***), Padua, Italy, July 18-23, 2022.
5. Peng Yu, **Ning Tan***, Mao Zhang, and Fenglei Ni, "Inverse-Free Tracking Control of Continuum Robots with Unknown Models Based on Gradient Neural Networks", in: IEEE 11th Data Driven Control and Learning Systems Conference (***DDCLS***), Emeishan, Sichuan Province, China, August 03-05, 2022.
6. Yunce Zhang, Tao Wang, **Ning Tan**, and Shiqiang Zhu, "Open-Loop Motion Control of a Hydraulic Soft Robotic Arm Using Deep Reinforcement Learning", in: International Conference on Intelligent Robotics and Applications (***ICIRA***), Yantai, China, October 22-25, 2021.
7. Ruikun Hu, **Ning Tan** *, and Fenglei Ni, "A New Scheme for Cooperative Hunting Tasks with Multiple Targets in Dynamic Environments", in: IEEE International Conference on Robotics and Biomimetics (***ROBIO***), pp. 1816-1822, Sanya, China, December 27-31, 2021.
8. **Ning Tan**, Ruikun Hu, Yuyang Wu, Xinyu Zhang, Fenglei Ni, and Zhenglong Sun, "Synchronous Motion Generation of Multiple Continuum Robots Based on a Jacobian-Estimation Strategy", in: IEEE International Conference on Robotics and Biomimetics (***ROBIO***), pp. 475-482, Sanya, China, December 27-31, 2021.
9. Masataka Fuchida, **Ning Tan***, Hiroya Yatsuyanagi, Rajesh Elara Mohan, Kazushige Okayasu, and Akio Nakamura, "A Classification Module for Automated Mosquito Surveillance Using Computer Vision", in: IEEE International Conference on Robotics and Biomimetics (***ROBIO***), Sanya, China, December 27-31, 2021.
10. Jiahao Fang, Xueyi Zhang, Xingchao Wang, Xiaoqiang Ji, **Ning Tan**, and Zhenglong Sun, "A CNN-Based Position Control Method for Under-Actuated Cable-Driven Serpentine Manipulator", in: IEEE International Conference on Robotics and Biomimetics (***ROBIO***), Sanya, China, December 27-31, 2021.
11. **Ning Tan**, Peng Yu, Fenglei Ni, and Zhenglong Sun, "Trajectory Tracking of Soft Continuum Robots with Unknown Models Based on Varying Parameter Recurrent Neural Networks", in IEEE International Conference on Systems, Man, and Cybernetics (***SMC***), pp. 1035-1041, Melbourne, Australia, October 17-20, 2021.
12. Yunong Zhang, Zhenyu Li, Min Yang, Peng Yu and **Ning Tan**, "Gradient-Zhang Neural Dynamics Models Computing Pseudoinverses of Time-Varying Matrices via ZeaD and Extrapolation Formulas", in The International Joint Conference on Neural Networks (***IJCNN***), July 18-22, 2021, Shenzhen, China.

13. Yuyang Wu and **Ning Tan***, “Model-Less Feedback Control for Soft Manipulators with Jacobian Adaptation”, The 4rd International Symposium on Autonomous Systems (***ISAS***), pp. 217-222, 2020, Guangzhou, China.
14. **Ning Tan**, Zelei Zhu, and Peng Yu, “Neural-Network-Based Control of Wheeled Mobile Manipulators with Unknown Kinematic Models”, The 4rd International Symposium on Autonomous Systems (***ISAS***), pp. 212-216, 2020, Guangzhou, China. (**Best Paper Award**)
15. **Ning Tan**, Mao Zhang, and Peng Yu, “Controlling Robot Manipulators Using Gradient-Based Recursive Neural Networks”, The 4rd International Symposium on Autonomous Systems (***ISAS***), pp. 207-211, 2020, Guangzhou, China.
16. Nini Shi, Min Yang, Huanchang Huang, **Ning Tan**, and Yunong Zhang, “Discrete-Time ODE Solutions Generated by TZD and ZeaD4Ig2_Y Formulas: Numerical Results”, The 9th International Conference on Information Science and Technology (***ICIST***), pp. 304-310, August 2-5, 2019, Hulunbuir, China.
17. **Ning Tan**, Nishaan Brahmananthan, Rajesh Elara Mohan, and Veerajagadheswar Prabakaran, “Game-Inspired Engineering Design: Processes and Case Studies”, 2019 IEEE International Conference on Real-time Computing and Robotics (***RCAR***), pp. 340-346, August 4-9, 2019, Irkutsk, Russia.
18. Yunong Zhang, Xiao Liu, Yang Shi, Mingzhi Mao, and **Ning Tan**, “Discrete-Time Zeroing Dynamics Model for Solving Generalized Sylvester Future Matrix System”, The 38th Chinese Control Conference (***CCC***), pp. 29-34, July 27-30, 2019, Guangzhou, China.
19. **Ning Tan**, Nini Shi, Huanchang Huang, Jinjin Guo, and Yunong Zhang, “Output Tracking Control of Time-Varying Nonlinear Scalar Systems Using ZD and ZG Methods”, The 31st Chinese Control and Decision Conference (***CCDC***), pp. 6130-6136, June 3-5, 2019, Nanchang, China.
20. Siyuan Feng, **Ning Tan**, Huanchang Huang, Min Yang, and Yunong Zhang, “Defeating 2-D Runge Problem by Coefficients and Order Determination (CAOD) Method”, The 31st Chinese Control and Decision Conference (***CCDC***), pp. 6078-6083, June 3-5, 2019, Nanchang, China.
21. Jinjin Guo, Yunong Zhang, Huanchang Huang, Binbin Qiu, and **Ning Tan**, “Four-Point ZeaD (Zhang et al Discretization) Formula Applied to Output Tracking of Mass-Spring-Damper Mechanical System”, The 31st Chinese Control and Decision Conference (***CCDC***), pp. 5433-5440, June 3-5, 2019, Nanchang, China.
22. Zhijun Zhang, Lingdong Kong, Ziyi Yan, Ke Chen, Shuai Li, Xilong Qu and **Ning Tan**, “Comparisons among Six Numerical Methods for Solving Repetitive Motion Planning of Redundant Robot Manipulators”, in: IEEE International Conference on Robotics and Biomimetics (***ROBIO***), Kuala Lumpur, Malaysia, December 12-15, 2018.
23. Anu Maashaa Nedumaran, Kayalvizhi Silvakumaran, **Ning Tan***, Thejus Pathmakumar, Rajesh Elara Mohan, and Sampath Kumar Suganya, “Towards Robot-Aided Visual Sampling of Floor Dust in Indoor Settings”, in IEEE International Conference on Advanced Robotics and Mechatronics (***ICARM***), 2018.
24. **Ning Tan**, Mohan Rajesh Elara, Yoke Ying Wong, and Ricardo Sosa, "Robot Ergonomics: A Case Study of Chair Design for Roomba", in 24th IEEE International Symposium on Robot and Human Interactive Communication (***RO-MAN***), Kobe, Japan, 2015.
25. Kapilavai Aditya, Mohan Rajesh Elara, and **Ning Tan**, "Bioinspired Design: A Case Study of Reconfigurable Crawling-Rolling Robot", in International Conference on Engineering Design (***ICED***), Milan, Italy, 2015.
26. **Ning Tan**, Arnab Sinha, Rajesh Elara Mohan, “Design and Realization of the Biomimetic Predator-prey Vision Based on a Self-reconfigurable Robot”, in: 2014 IEEE International Conference on Robotics and Biomimetics (***ROBIO***), Bali, Indonesia, December 5-10, 2014.
27. **Ning Tan**, Cédric Clévy, Guillaume J. Laurent, Patrick Sandoz, and Nicolas Chaillet, “Characterization and compensation of XY micropositioning robots using vision and pseudo-periodic encoded patterns”, in IEEE International Conference on Robotics and Automation (***ICRA***), Hong Kong, China, 2014.
28. **Ning Tan**, Cédric Clévy, and Nicolas Chaillet, “Calibration of single-axis nanopositioning cell subjected to thermal disturbance”, in IEEE International Conference on Robotics and Automation (***ICRA***), Karlsruhe, Germany, 2013.
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30. Ioan Alexandru Ivan, Mihai Ardeleanu, Guillaume J. Laurent, **Ning TAN** and Cédric Clévy, “The metrology and applications of PSD (position sensitive detector) sensors for microrobotics”, in International Symposium on Optomechatronic Technologies (***ISOT***), Paris, France, 2012.
31. Yunong Zhang, **Ning Tan**, and Chunyan Lai. “Bi-criteria torque minimization of redundant robot arms with

schemes, models and methods compared", in: 2009 IEEE International Conference on Robotics and Biomimetics (***ROBIO***), Guilin, China, December 19-23, 2009.

32. Yunong Zhang, Peng Xu, and **Ning Tan**, "Solution of nonlinear equations by continuous-and discrete-time Zhang dynamics and more importantly their links to Newton iteration", in: The 7th International Conference on Information, Communications and Signal Processing (***ICICSP***), Macau, China, December 10, 2009.
33. Yunong Zhang, Xuezhong Li, Hong Zhu, and **Ning Tan**, "Joint-angle-drift remedy of three-link planar robot arm performing different types of end-effector trajectories", in: Proceedings of 2009 IEEE International Conference on Intelligent Computing and Intelligent Systems (***ICICIS***), vol. 2, pp. 581-585, Shanghai, China, November 20-22, 2009.
34. Yunong Zhang, Peng Xu, and **Ning Tan**, "Further studies on Zhang neural-dynamics and gradient dynamics for online nonlinear equations solving", in: 2009 IEEE International Conference on Automation and Logistics (***ICAL***), pp. 566-571, Shenyang, China, August 5-7, 2009.
35. Yunong Zhang, Yiwen Yang, and **Ning Tan**, "Time-Varying matrix square roots solving via Zhang neural network and gradient neural network: modeling, verification and comparison", in: LNCS Proceedings of the 6th International Symposium on Neural Networks (***ISNN***), vol. 5551, pp. 11-20, Wuhan, China, May 26-29, 2009.
36. **Ning Tan**, Ke Chen, Yanyan Shi, and Yunong Zhang, "Modeling, verification and comparison of Zhang neural net and gradient neural net for online solution of time-varying linear matrix equation", in: The 4th IEEE Conference on Industrial Electronics and Application (***ICIEA***), pp. 3698-3703, Xi'an, China, May 25-27, 2009.
37. Yunong Zhang, **Ning Tan**, Binghuang Cai, and Zenghai Chen, "MATLAB Simulink modeling of Zhang neural network solving for time-varying pseudoinverse in comparison with gradient neural network", in: Proceedings of the 2nd International Symposium on Intelligent Information Technology Application (***IITA***), vol. 1, pp. 39-43, Shanghai, China, December 22-23, 2008.

Books and Book Chapters

1. **Ning Tan**, Calibration of Micro-nanopositioning Robots, LAP LAMBERT Academic Publishing, 2016.
2. **Ning Tan**, Mohan Rajesh Elara, and Karthikeyan Elangovan, "A Bio-inspired Reconfigurable Robot", in Advances in Reconfigurable Mechanisms and Robots II, Part IV, pp. 483-493, Springer International Publishing, Switzerland, 2016.
3. Teo Kiah Hwee, Mohan Rajesh Elara, Ricardo Sosa, and **Ning Tan***. "Analysing the Innovation Growth of Robotic Pets through Patent Data Mining", in ***ICoRD'15*** – Research into Design Across Boundaries Volume 2, pp. 365-374, Springer India, 2015.
4. Yunong Zhang and **Ning Tan**, "Weights direct determination of feedforward neural networks without iterative BP-training", in: Intelligent Soft Computation and Evolving Data Mining: Integrating Advanced Technology. (Editors: L. S.-L. Wang, T.-P. Hong), pp. 197-225, Hershey, USA: IGI Global, 2010.

Awards

2022.12	Robotica Best Paper Finalist，2022 IEEE International Conference on Robotics and Biomimetics (ROBIO)
2020.12	Best Paper Award，The 4th International Symposium on Autonomous Systems (ISAS 2020)

Academic Services

1. Invited Reviewer
   1) Journal: IEEE/ASME Transactions on Mechatronics, IEEE Transactions on Industrial Electronics, IEEE Transactions on Neural Networks and Learning Systems, IEEE Robotics and Automation Letters, IEEE Robotics and Automation Magazine, IEEE Transactions on Automation Science and Engineering, IEEE Transactions on Magnetics, IEEE/CAA Journal of Automatica Sinica, IEEE Access, Mechanism and Machine Theory, Robotics and Computer-Integrated Manufacturing, Bioinspiration & Biomimetics, Journal of Bionic Engineering, Frontiers in Neurorobotics, Frontiers in Robotics and AI, International Journal of Advanced Robotic Systems, Automation in Construction, ISA Transactions, Applied Soft Computing, International Journal of Distributed Sensor Networks, Assembly Automation, Complexity, Energies,

Entropy, Symmetry, Robotica, Sensors, Machines, Electronics, Information, Healthcare, Diagnostics, Robotics, Applied Sciences, Current Oncology, Brain Sciences, J. Imaging, Journal of Robotics, Journal of Personalized Medicine, Applied Mathematics and Computation, International Journal of Environmental Research and Public Health, Journal of Engineering, Design and Technology, Journal of Advanced Simulation in Science and Engineering, Education Sciences, Artificial Intelligence Research, IETE Journal of Research, Journal of Shanghai Jiao Tong University (Science), Cyborg and Bionic Systems

2) Conference: ICRA, IROS, AAAI, CASE, ROBIO, MRS, ARM, ICED, HAI, CCC, ICIA, AIR, ICICIP, IFToMM World Congress, ReMAR, ICICS, CIS-RAM, MEIE

2. Program Committee member of AAAI-22, AAAI-21, ICANN2023, ICANN2022, WCSP'20, ISNN2015, HAI2016, ICICIP 2016, ICIA 2016, ICIA 2017, ROBIO2019
3. Associate Editor and Session Chair: The 4th International Symposium on Autonomous Systems, 2020 ISAS
4. Topics Editor (Member of Editorial Board): Micromachines
5. Topic Editor: Frontiers in Robotics and AI, On Underwater Soft Robots: Design, Modeling, Control and Applications
6. Review Editor: Frontiers in Robotics and AI, Nano- and Microrobotics
7. Editorial Review Board of Artificial Intelligence Research (AIR)
8. Membership: IEEE (Senior Member), IEEE RAS, ASME