Kaige Tan

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Education

- Ph.D student   Royal Institute of Technology, Stockholm, Sweden   *Dec, 2020 - Present*
- M.Sc.   Royal Institute of Technology, Stockholm, Sweden   *Sept, 2017- Sept, 2019*
  Major: Engineering design, Track: Mechatronics
- B.Sc.   Harbin Institute of Technology, Harbin, P. R. China   *Sept, 2014- June, 2017*
  Major: Mechatronics

Research Interests

- Convex optimization
- Reinforcement learning
- Optimal control
- Optimal filtering
- Edge computing application
- Soft robotics

Journal Publications

- **Tan, K.**, Ji, Q., Feng, L., & Törngren, M. (2023). Edge-enabled Adaptive Shape Estimation of 3D Printed Soft Actuators with Gaussian Processes and Unscented Kalman Filters. *IEEE Transactions on Industrial Electronics* (early access).

- Liu, T., **Tan, K.**, Zhu, W., & Feng, L. (2023). Computationally Efficient Energy Management for a Parallel Hybrid Electric Vehicle Using Adaptive Dynamic Programming. *IEEE Transactions on Intelligent Vehicles* (early access).

- Yang, J., **Tan, K.**, Feng, L., & Li, Z. (2023). A model-based deep reinforcement learning approach to the nonblocking coordination of modular supervisors of discrete event systems. *Information Sciences*, 630, 305-321.

- **Tan, K.**, Feng, L., Dán, G., & Törngren, M. (2022). Decentralized Convex Optimization for Joint Task Offloading and Resource Allocation of Vehicular Edge Computing Systems. *IEEE Transactions on Vehicular Technology*, 71(12), 13226-13241.

- **Tan, K.**, Ji, Q., Feng, L., & Törngren, M. (2022). Shape estimation of a 3D printed soft sensor using multi-hypothesis extended Kalman filter. *IEEE Robotics and Automation Letters*, 7(3), 8383-8390.

- Ji, Q., Fu, S., **Tan, K.**, Muralidharan, S. T., Lagrelius, K., Danelia, D., ... & Feng, L. (2022). Synthesizing the optimal gait of a quadruped robot with soft actuators using deep reinforcement learning. *Robotics and Computer-Integrated Manufacturing*, 78, 102382.

- Song, Q., **Tan, K.**, Runeson, P., & Persson, S. (2022). Critical scenario identification for realistic testing of autonomous driving systems. *Software Quality Journal*, 1-29.

- Zhang, X., Tao, J., **Tan, K.**, Törngren, M., Sanchez, J. M. G., Ramli, M. R., ... & Felbinger, H. (2022). Finding critical scenarios for automated driving systems: A systematic mapping study. *IEEE Transactions on Software Engineering*, 49(3), 991-1026.

- Cheng, X., Yang, B., **Tan, K.**, Isaksson, E., Li, L., Hedman, A., ... & Li, H. (2019). A contactless measuring method of skin temperature based on the skin sensitivity index and deep learning. *Applied Sciences*, 9(7), 1375.

Conference Publications

- **Tan, K.**, Feng, L. & Törngren, M. (2023). Collaborative Collision Avoidance of Connected Vehicles Using ADMM with PI-Regulated Lagrangian Multipliers. Accepted in *2023 IEEE 19th International Conference on Automation Science and Engineering (CASE)*.
- Liu, T., **Tan, K.**, Zhu, W., & Feng, L. (2023). Optimal and Adaptive Engine Switch Control for a Parallel HybridElectric Vehicle Using a Computationally Efficient Actor-Critic Method. In *2023 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)*.
- Liu, T., Zhu, W., **Tan, K.**, Liu, M., & Feng, L. (2022, August). A Low-Complexity and High-Performance Energy Management Strategy of a Hybrid Electric Vehicle by Model Approximation. In *2022 IEEE 18th International Conference on Automation Science and Engineering (CASE)* (pp. 455-462). IEEE.
- Song, Q., **Tan, K.**, Runeson, P., & Persson, S. (2021, August). An Industrial Workbench for Test Scenario Identification for Autonomous Driving Software. In *2021 IEEE International Conference on Artificial Intelligence Testing (AITest)* (pp. 81-82). IEEE.

Academic Activities

- Teaching assistant for master level courses at KTH (MF2030, MF2007, MF2103)
- Master thesis supervision (full list found at here)
- Active reviewers for international journals and conferences (including, IEEE T-WC, IEEE T-MC, IEEE RA-L, RAS, DSN2023)

Work Experiences

- MIL system engineer at BOSCH Group   *August, 2019 – Sept, 2020*
- VESC program at Volvo Cars (summer internship & master thesis)   *June, 2018 – July, 2019*

Honors

- IEEE RAS Travel Grant Awardee for the IEEE CASE 2023   *2023.08*
- KTH Travel scholarship Awardee from the Karl Engvers foundation   *2022.11*
- The First Prize in China Undergraduate Mathematical Contest in Modeling (CUMCM), Heilongjiang Province Division   *2016.09*
- The Third Prize in Shenzhen Cup of Mathematical Contest in Modeling, China   *2016.05*
- Meritorious Winner in Mathematical Contest In Modeling (MCM/ICM), America   *2016.02*
- Excellent Undergraduate Scholarship   *2014-2015*