CHEN TANG

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EDUCATION

University of California Berkeley *August 2016 - June 2022 (Expected)*
PhD Candidate in Mechanical Engineering (Control) GPA: 3.941/4.0
Minors: Machine learning, Optimization
Advisor: Prof. Masayoshi Tomizuka

Hong Kong University of Science and Technology *August 2012 - June 2016*
BEng in Mechanical Engineering GPA: 3.951/4.3
Minor: Mathematics

Georgia Institute of Technology *August 2014 - December 2014*
Exchange Student in Mechanical Engineering GPA: 4.0/4.0

RESEARCH INTEREST

The goal of my research is to develop trustworthy and safe intelligent autonomous systems interacting with humans (e.g., autonomous vehicles). In particular, I am primarily interested in improving the transparency and robustness of learning-based autonomous systems, by incorporating domain knowledge and other techniques (e.g., model-based control, explainable AI) with deep learning models in a principled manner. Applications of my research include multi-agent trajectory prediction, interaction modeling, motion planning, and vehicle control.

WORK EXPERIENCE

Waymo Behavior Team *May 2021 - August 2021*
Intern, Planner Prediction Router ML & Deep Learning (Host: Qiaojing Yan, Stephane Ross)
- Build a fast conditional prediction model with deep learning based on Multipath, which achieves the same prediction quality as the full model but significantly reduces inference time.

Honda Research Institute US *June 2019 - Dec 2019*
Student Research Intern (Mentor: Sujitha Martin)
- Propose an explainable relational inference framework combining IRL and neural relational inference to incorporate domain knowledge into deep learning models in a principled manner.

TEACHING EXPERIENCE

Department of Mechanical Engineering, UC Berkeley *Jan 2020 - May 2020*
Graduate Student Instructor - ME 233 (Instructor: Prof. Masayoshi Tomizuka)

PUBLICATIONS

Journal Papers

1. **C. Tang***, Z. Xu*, and M. Tomizuka, "Disturbance-observer-based tracking controller for neural network driving policy transfer," *IEEE Transactions on Intelligent Transportation Systems*, 2019
2. Á. Cuenca, W. Zhan, J. Salt, J. Alcaina, **C. Tang**, and M. Tomizuka, "A remote control strategy for an autonomous vehicle with slow sensor using kalman filtering and dual-rate control," *Sensors*, vol. 19, no. 13, p. 2983, 2019

3. X. Liu, **C. Tang**, X. Du, S. Xiong, S. Xi, Y. Liu, X. Shen, Q. Zheng, Z. Wang, Y. Wu, *et al.*, "A highly sensitive graphene woven fabric strain sensor for wearable wireless musical instruments," *Materials Horizons*, vol. 4, no. 3, pp. 477–486, 2017

Conference Proceedings

1. J. Li, **C. Tang**, M. Tomizuka, and W. Zhan, "Dealing with the unknown: Pessimistic offline reinforcement learning," in *5th Annual Conference on Robot Learning (CoRL)*, 2021
2. J. M. S. Ducaju, **C. Tang**, and M. Tomizuka, "Application specific system identification for model-based control in self-driving cars," in *2020 IEEE Intelligent Vehicles Symposium (IV)*, IEEE, 2020
3. **C. Tang**, J. Chen, and M. Tomizuka, "Adaptive probabilistic vehicle trajectory prediction through physically feasible bayesian recurrent neural network," in *2019 International Conference on Robotics and Automation (ICRA)*, pp. 3846–3852, IEEE, 2019
4. Z. Xu, H. Chang, **C. Tang**, C. Liu, and M. Tomizuka, "Toward modularization of neural network autonomous driving policy using parallel attribute networks," in *2019 IEEE Intelligent Vehicles Symposium (IV)*, pp. 1400–1407, IEEE, 2019
5. Z. Xu*, **C. Tang***, and M. Tomizuka, "Zero-shot deep reinforcement learning driving policy transfer for autonomous vehicles based on robust control," in *2018 21st International Conference on Intelligent Transportation Systems (ITSC)*, pp. 2865–2871, IEEE, 2018
6. J. Chen, **C. Tang**, L. Xin, S. E. Li, and M. Tomizuka, "Continuous decision making for on-road autonomous driving under uncertain and interactive environments," in *2018 IEEE Intelligent Vehicles Symposium (IV)*, pp. 1651–1658, IEEE, 2018
7. C. Zhao, R. Xu, K. Song, D. Liu, S. Ma, **Chen. Tang**, C. Liang, Y. Zohar, and Y.-K. Lee, "The capillary number effect on the capture efficiency of cancer cells on composite microfluidic filtration chips," in *2015 28th IEEE International Conference on Micro Electro Mechanical Systems (MEMS)*, pp. 459–462, IEEE, 2015

Workshop Papers

1. **C. Tang**, N. Srishankar, S. Martin, and M. Tomizuka, "Explainable autonomous driving with grounded relational inference," in *NeurIPS Workshop on Machine Learning for Autonomous Driving*, 2020

Working Papers

1. **C. Tang**, N. Srishankar, S. Martin, and M. Tomizuka, "Grounded relational inference: Domain knowledge-driven explainable autonomous driving," under review at IEEE Transactions on Robotics
2. **C. Tang**, W. Zhan, and M. Tomizuka, "Exploring social posterior collapse in variational autoencoder for interaction modeling," under review at NeurIPS 2021
3. J. Chen, **C. Tang**, W. Zhan, and M. Tomizuka, "Interaction-and-uncertainty-aware joint decision making and trajectory planning for urban on-road autonomous driving," in preparation for journal submission

AWARDS AND SCHOLARSHIPS

Graduate Division Block Grant Summer 2020
IEEE ITSC 2018 Best Student Paper Runner-up
HKUST Academic Achievement Medal (top 1%)
HKUST President's Cup Silver Award (2016)
ROBOCON Hong Kong Contest First Runner-up (2013, 2014)
ABU ROBOCON Final Eight, Best Engineering Award (2013)

ACADEMIC SERVICES

Reviewers

- IEEE Transaction on Intelligent Transportation Systems
- IEEE International Conference on Robotics and Automation
- IEEE Intelligent Vehicles Symposium
- IEEE International Conference on Control, Automation, Robotics and Vision
- American Control Conference

Program Committee

- Co-organizer of Workshop at IEEE Conference on Robotics and Systems (IROS), 2021
- Associate Editor at IEEE Intelligent Transportation Systems Conference (ITSC), 2021

TECHNICAL SKILLS

Programming Skills	Python, Matlab, C++, ROS, Tensorflow, Pytorch, Arduino
Industrial Software	SolidWorks, AutoCAD, Simulink