

CHEN TANG

<https://chentangmark.github.io>

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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: Qiaoqing 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 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