Yue Meng

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FIELD OF INTERESTS

Safety-assured autonomy; Multi-agent planning; Machine learning; Computer vision

EDUCATION

Ph.D. in Aeronautics and Astronautics   Sep. 2020 - Current
Massachusetts Institute of Technology, MA, USA

M.S. in Electrical and Computer Engineering   Sep. 2017 - Mar. 2019
University of California San Diego, CA, USA

B.E. in Department of Automation   Aug. 2013 - Jul. 2017
Tsinghua University, Beijing, China

PUBLICATIONS

Y. Meng, and C. Fan, "Signal Temporal Logic Neural Predictive Control", in *IEEE Robotics and Automation Letters (RA-L)*, 2023 [PDF]

Y. Meng, and C. Fan, "Hybrid Systems Neural Control with Region-of-Attraction Planner", in *5th Annual Conference on Learning for Dynamics and Control (L4DC)*, 2023 [PDF]

L. Lützow, **Y. Meng**, A. Armijos, and C. Fan, "Density Planner: Minimizing Collision Risk in Motion Planning with Dynamic Obstacles using Density-based Reachability", in *IEEE Int. Conf. on Robotics and Automation (ICRA)*, 2023 [PDF]

Y. Meng, Z. Qiu, M. Waez and C. Fan, "Case Studies for Computing Density of Reachable States for Safe Autonomous Motion Planning", in *NASA Formal Methods Symposium (NFM)*, 2022 [PDF]

Y. Meng, D. Sun, Z. Qiu, M. Waez and C. Fan, "Learning Density Distribution of Reachable States for Autonomous Systems", in *5th Conference on Robot Learning (CoRL)*, 2021 [PDF]

Y. Meng, Z. Qin and C. Fan, "Reactive and Safe Road User Simulations using Neural Barrier Certificates", in *IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, 2021 [PDF]

Y. Meng, R. Panda, C. Lin, P. Sattigeri, L. Karlinsky, K. Saenko, A. Oliva and R. Feris, "AdaFuse: Adaptive Temporal Fusion Network for Efficient Action Recognition," in *Int. Conf. on Learning Representations (ICLR)*, 2021 [PDF]

Y. Meng, C. Lin, R. Panda, P. Sattigeri, L. Karlinsky, K. Saenko, A. Oliva and R. Feris, "AR-Net: Adaptive Frame Resolution for Efficient Action Recognition," in *European Conf. on Computer Vision (ECCV)*, 2020 (acceptance rate 27.0%) [PDF]

C. Li, **Y. Meng**, S. Chan and Y. Chen, "Learning 3D-aware Egocentric Spatial-Temporal Interaction via Graph Convolutional Networks," in *IEEE Int. Conf. on Robotics and Automation (ICRA)*, 2020 [PDF]

Q. Feng, **Y. Meng**, M. Shan, and N. Atanasov, "Localization and Mapping using Instance-specific Mesh Models," in *IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, 2019 [PDF]

Y. Meng, Y. Lu, A. Raj, S. Sunarjo, G. Bansal, R. Guo, T. Javidi, and D. Bharadia, "SIGNet: Semantic Instance Aided Unsupervised 3D Geometry Perception," in *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2019 (acceptance rate 25.2%) [PDF]

Y. Meng, L. Li, F. Wang, K. Li, and Z. Li, "Analysis of Cooperative Driving Strategies for Nonsignalized Intersections," *IEEE Transactions on Vehicular Technology (TVT), 67 (4)*, [PDF]

AWARDS AND HONORS

Amazon Robotics Fellowship, 2023 - 2024

Study & Sports Scholarship of Tsinghua University, 2014, 2015

RESEARCH EXPERIENCE

Research Assistant, Massachusetts Institute of Technology, Cambridge, MA   Sep. 2020 - Current
Advisor: Chuchu Fan, Department of Aeronautics and Astronautics
− Learning controller synthesis for Signal Temporal Logic specifications
− Control hybrid systems using differentiable RoA-based planning approach
− Learning-based reachability distribution estimation via solving Liouville PDE
− Safe and decentralized multi-agent planning for autonomous driving via control barrier functions

Research Intern, Microsoft Research, WA, USA   May. 2022 - Aug. 2022
Mentor: Sai H. Vemprala, Senior Researcher
− Learning robot safety concepts from demonstrations.

AI Resident, IBM Thomas J. Watson Research Center, NY, USA   Sep. 2019 - Aug. 2020
Mentor: Rogerio S. Feris, Research Manager
− Efficient video understanding and few-shot learning

Research Intern, Honda Research Institute, CA, USA   Mar. 2019 - Jun. 2019
Mentor: Yi-Ting Chen, Research Scientist
− Proposed a bird's-eye view representation for driving scene understanding

Research Assistant, University of California San Diego, CA, USA   Jan. 2018 - Mar. 2019
Advisor: Nikolay A. Atanasov, Electrical and Computer Engineering
− Developed semantic perception and tracking pipeline for 3D reconstruction

Research Assistant, University of California San Diego, CA, USA   Sep. 2018 - Dec. 2018
Advisor: Dinesh Bharadia, Tara Javidi, Electrical and Computer Engineering
− Proposed semantic unsupervised learning framework for depth and flow estimation

Research Assistant, Tsinghua University, Beijing, China   Sep. 2015 - Jun. 2017
Advisor: Li Li, Department of Automation
− Designed a traffic simulation platform and analyzed cooperative driving strategies at intersections

PROFESSIONAL EXPERIENCE

Software Engineering Intern, Google Geo, Mountain View, CA, USA   Jun. 2019 - Sep. 2019
− Improved user-photo timestamp correction by using image content-based annotation

Software Engineering Intern, Google Ads, New York, NY, USA   Jun. 2018 - Sep. 2018
− Migrated Ads prediction modules from Sibyl to Tensorflow platform

System Development Intern, TuSimple, Beijing, China   Jul. 2017 - Sep. 2017
− Implemented Faster-RCNN for cameras on bus and optimized the pipeline by 40%

TEACHING EXPERIENCE

Teaching Assistant, University of California, San Diego, CA, USA   Jan. 2019 - Mar. 2019
Course: Stochastic Processes in Dynamic Systems I

TECHNICAL SKILLS

Programming: Python, C++, Matlab, Julia, C#

Tools: Tensorflow, Pytorch, ROS, Git, Linux, Docker, Kubernetes, LaTeX

Languages: Proficient in English and Chinese