Li Ding

CONTACTS

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EDUCATION

Massachusetts Institute of Technology, Cambridge, MA 2019.9 - 2020.1
Graduate Study in Electrical Engineering and Computer Science (non-degree)

University of Rochester, Rochester, NY 2016.6 - 2017.5
M.S. in Data Science

Central University of Finance and Economics, Beijing, China 2012.9 - 2016.6
B.S. in Statistics

EXPERIENCE

Massachusetts Institute of Technology, Cambridge, MA 2017.9 - present
Research Engineer

- Advisor: Dr. Lex Fridman and Dr. Bryan Reimer
- Work on autonomous vehicles and human-centered AI, develop deep learning and computer vision algorithms for driving scene perception and driver mental state monitoring.
- Published in top-tier computer vision and autonomous driving conferences and workshops.

University of Rochester, Rochester, NY 2017.5 - 2017.9
Research Associate

- Advisor: Prof. Chenliang Xu
- Developed an algorithm for weakly-supervised action recognition, published in CVPR 2018.

SELECTED PUBLICATIONS

- L. Fridman, **L. Ding**, B. Jenik, and B. Reimer, "Arguing Machines: Human Supervision of Black Box AI Systems That Make Life-Critical Decisions," in *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR): Workshop on Autonomous Driving*, 2019
- **L. Ding** and C. Xu, "Weakly-Supervised Action Segmentation with Iterative Soft Boundary Assignment," in *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.
- L. Fridman, H. Schmidt, J. Terwilliger, and **L. Ding**, "Human Interaction with Deep Reinforcement Learning Agents in Virtual Reality," in *Advances in Neural Information Processing Systems (NeurIPS): Deep Reinforcement Learning Workshop*, 2018.

HONORS AND AWARDS

SCHOLARSHIPS

- Half-Tuition Scholarship for Graduate Study, *University of Rochester* 2016
- Excellent Youth of the Year (top 2%), *Central Univ. of Finance and Economics* 2015

COMPETITIONS

- 4th Place (among 150 teams, top 3%), *MIT 6.869 Miniplaces Challenge* 2019
- Bronze Medal (107th of 1972, top 6%), *Kaggle Data Science Bowl* 2017
- Meritorious Winner (top 5%), *COMAP Mathematical Contest In Modeling* 2015

Projects

Cognitive Load Assessment with Pupil Dynamics Analysis 2018 - present

Research project at MIT, sponsored by Veoneer and MIT AHEAD Consortium

- Proposed a novel method for precise keypoint detection and a model for real-time pupil and blink detection, developed a large-scale open-source dataset, under review at ECCV 2020.
- Developed machine learning methods using pupil movement dynamics, human emotion, and behavior features to estimate cognitive load, presented at MIT AHEAD Consortium.

Driving Scene Perception and Edge Case Enumeration 2017 - present

Research project at MIT, sponsored by Toyota Collaborative Safety Research Center

- Proposed a framework combining image representations and temporal dynamics to improve video scene segmentation and reveal the contribution of each, under review at IEEE Trans IV.
- Proposed visual clustering methods and automated perception evaluation metrics, developed a large-scale naturalistic driving dataset, under review at IEEE IV 2020.

Black Betty: MIT Human-Centered Autonomous Vehicle 2018 - 2019

Research project at MIT, sponsored by Veoneer

- Developed a real-time camera perception and control system that enables semi-autonomous driving on a testing vehicle. Demos can be found at `hcai.mit.edu/hcav`.
- Studied the principles of shared autonomy, proposed an Arguing Machine framework that improves AI systems with human-in-the-loop, published in CVPR 2019 Workshop.

Human Action Recognition in Video Sequences 2017

Research project at Univ. of Rochester, sponsored by NSF BIGDATA

- Proposed a training strategy and an improved deep learning architecture for weakly supervised action localization using the ordering of actions, published in CVPR 2018.

Presentations

Data-Driven Computer Vision Research for Human-Centered Autonomous Vehicles 2019.10

Invited talk at MIT CSAIL (Data Systems Group)

Weakly-Supervised Action Segmentation with Iterative Soft Boundary Assignment 2018.6

Poster presentation at CVPR 2018

Misc.

Teaching Assistant

- MIT 6.S094: Deep Learning for Self-Driving Cars Winter 2018 & 2019
- MIT 6.S099: Artificial General Intelligence Winter 2018

Side Projects

- Created tutorials and competitions for MIT Deep Learning courses (7k stars on Github).
- Prepared interview materials for AI Podcast with Dr. Lex Fridman (12M views on Youtube).
- Taught a summer/winter workshop at MIT with Dr. Tom Bertalan to high school students on building and programming autonomous robocars.

Programming & Deep Learning

Python, JavaScript, C++, TensorFlow, PyTorch, Keras, TensorFlow.js.

Software and Tools

Linux/Unix, Bash, Git, LaTeX, Docker, OpenCV, FFmpeg, ROS, MySQL.