

JIACHENG ZHU

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EDUCATION

- M.S. in Machine Learning**, *Machine Learning Department* *Dec 2019 - Present*
School of Computer Science, Carnegie Mellon University, PA, USA
- Ph.D. Candidate**, *Mechanical Engineering* *Sept 2018 - Present*
College of Engineering, Carnegie Mellon University, PA, USA
- Minor in Data Science**, *Sept 2015 - June 2017*
School of Computer Science, Fudan University, Shanghai, China
- B.Eng. in Aerospace design and Engineering**, *Sept 2013 - June 2017*
School of Aeronautics and Astronautics, Fudan University, Shanghai, China

CURRENT RESEARCH

Jiacheng Zhu's research target is to develop interpretable machine learning techniques that transport and utilize knowledge across different domains. To achieve this goal, he leverages probabilistic theory, Bayesian inference, and optimal transport. He tackles machine learning problems on heterogeneous real-world datasets in robotics, autonomous driving, and healthcare.

SELECTED PUBLICATIONS & PREPRINTS

- Functional Optimal Transport: map estimation and domain adaptation for functional data**,
Jiacheng Zhu*, Aritra Guha*, Dat Do*, Mengdi Xu, XuanLong Nguyen, Ding Zhao, *submitted to Journal of Machine Learning Research*.
- GeoECG: Data Augmentation via Wasserstein Geodesic Perturbation for Robust Electrocardiogram Prediction**,
Jiacheng Zhu*, Jielin Qiu*, Zhuolin Yang, Douglas Weber, Michael Rosenberg, Emerson Liu, Bo Li, Ding Zhao, *Under review*.
- MHMS: Multimodal Hierarchical Multimedia Summarization**,
Jielin Qiu, **Jiacheng Zhu**, Mengdi Xu, Frank Dernoncourt, Trung Bui, Zhaowen Wang, Bo Li, Ding Zhao, Hailin Jin, *Under review*.
- Optimal transport based data augmentation for heart disease diagnosis and prediction**,
Jielin Qiu*, **Jiacheng Zhu***, Michael Rosenberg, Emerson Liu, Ding Zhao, *Under review*.
- PhysioMTL: Personalizing Physiological Patterns using Optimal Transport Multi-Task Regression**,
Jiacheng Zhu, Gregory Darnell, Agni Kumar, Ding Zhao, Bo Li, XuanLong Nguyen, Shirley You Ren, *Conference on Health, Inference, and Learning (CHIL) 2022, PMLR*.
- Context-Aware Safe Reinforcement Learning for Non-Stationary Environments**
Baiming Chen, Zuxin Liu, **Jiacheng Zhu**, Mengdi Xu, Wenhao Ding, Liang Li, Ding Zhao
The 2021 International Conference on Robotics and Automation (ICRA 2021).
- Spatiotemporal learning of multivehicle interaction patterns in lane-change scenarios**
Chengyuan Zhang, **Jiacheng Zhu**, Wenshuo Wang, Junqiang Xi, *IEEE Transactions on Intelligent Transportation Systems, 2021*.

8. **Task-Agnostic Online Reinforcement Learning with an Infinite Mixture of Gaussian Processes**
Mengdi Xu, Wenhao Ding, **Jiacheng Zhu**, Zuxin Liu, Baiming Chen, Ding Zhao, *Conference on Neural Information Processing Systems (NeurIPS 2020)*.
9. **Recurrent Attentive Neural Process for Sequential Data**
Shenghao Qin*, **Jiacheng Zhu***, Jimmy Qin, Wenshuo Wang, Ding Zhao, *Conference on Neural Information Processing Systems (NeurIPS 2019) Workshop*.
10. **Probabilistic Trajectory Prediction for Autonomous Vehicles with Recurrent Attentive Neural Process**
Jiacheng Zhu*, Shenghao Qin*, Wenshuo Wang, Ding Zhao, *preprint*.
11. **A Tempt to Unify Heterogeneous Driving Databases using Traffic Primitives**
Jiacheng Zhu, Wenshuo Wang, Ding Zhao, *The 21st IEEE International Conference on Intelligent Transportation Systems (ITSC) 2018*.

WORK EXPERIENCE

Apple AI/ML

Research Intern - Health AI

May 2021-Oct 2021

Seattle, WA

- Develop machine learning models for real-world healthcare datasets

Isuzu Technical Center of America

Research Intern - Decision Making for Autonomous Driving

May 2020-Sep 2020

Ann Arbor, MI

- Developed a Decision-Making Module based on online trajectory prediction with deep generative models.
- Conduct the domain adaptation from public dataset to testing domain for real-world deployment

Etiger Capital Partners LLC

Quantitative Analyst - Data Mining & Analysis

Jun 2017-Aug 2017

Shanghai, China

- Independently built a Business-News-NLP Arbitrage on China's A-share stock market based on Hidden Markov Model, and Naive Bayes Classifier for identifying profitable opportunities

SELECTED PROFESSIONAL SERVICES

Reviewer

ICML (2021, 2022), NeurIPS (2021, 2022), ICLR 2022, CHIL 2022, TITS, ITSC 2018

TALKS & ACTIVITIES

PhysioMTL: Physiology-informed multi-task Learning

Spotlight presentation

April 2022

Conference on Health, Inference, and Learning, 2022

Functional Optimal Transport

Spotlight presentation

AAAI Workshop on Optimal Transport and Structured Data Modeling

February 2022

Demographic aware multitask learning for Heart Rate Variability

Intern presentation

August 2021

Apple AI/ML

Oxford Machine Learning Summer School

Attendee

July 2020

OxML 2020, Oxford University (Online)

Recurrent Attentive Neural Process for Sequential Data

Lightning Talks

NeurIPS 2019, Learning with Rich Experience (LIRE) Workshop, Vancouver

Dec 2019

HONORS

- Certification, Oxford Machine Learning Summer School, 2020 (Online)
- NeurIPS Student Travel Award, NeurIPS , 2019
- Rackham Travel Grant Fellowship, University of Michigan, Ann Arbor, 2018
- Junyuan Scholarship for Undergraduate Student, Fudan University, 2017
- Outstanding Undergraduate Thesis, Fudan University, 2016
- Xiexin Excellent Student Scholarship, Fudan University, 2016
- Junyuan Scholarship for Undergraduate Student, Fudan University, 2016
- ‘GuangHua Innovation Prize’ of Fudan University, Fudan University, 2015
- China Graduate Future Flight Vehicle Innovation Competition, First Prize, 2014

SELECTED COURSES

Statistical Machine Learning, Probabilistic Graphical Models, Convex Optimization, Reinforcement Learning, Advanced Deep Learning, Intro to Machine Learning, Computer Vision, Machine Learning with Large Datasets, Mobile Robotics: SLAM, Robot Kinematics & Dynamics, Database Management Systems, Data Structures and Algorithms

TECHNICAL AND PERSONAL SKILLS

Computer Languages	Python, JavaScript, C/C++, MATLAB
Softwares & Tools	TensorFlow, Pytorch, ROS, OpenRAVE, MySQL, OpenCV, CUDA, Solidworks, \LaTeX
Languages	English, Mandarin, Shanghai Dialect