

Jinghui Chen

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RESEARCH INTERESTS

Machine Learning, Optimization and Adversarial Machine Learning

EMPLOYMENT

Penn State University - University Park Starting 08/2021
Tenure-track Assistant Professor

EDUCATION

University of California, Los Angeles (UCLA) 09/2019 - Present
Ph.D. in Department of Computer Science
Advisor: Quanquan Gu

University of Virginia (UVa) 08/2015 - 06/2019
Ph.D. in Department of Computer Science
Advisor: Quanquan Gu

University of Science and Technology of China (USTC) 09/2011 - 06/2015
B.S. in Electronic Engineering and Information Science

RESEARCH EXPERIENCE

Microsoft Research 06/2020 - 09/2020
Research Intern
Building efficient and scalable robust training algorithms for large-scale practical systems in Microsoft.

- Mentor: Yu Cheng

Twitter 06/2019 - 08/2019
Machine Learning Intern
Improving the pipeline for Twitter user recommendation with deep neural networks.

- Mentor: Yao Wu

JD.COM Silicon Valley Research Center 05/2018 - 08/2018
Research Intern
Improving the efficiency and effectiveness of generating adversarial examples in black-box settings.

- Mentor: Jinfeng Yi

IBM T.J Watson Research Center 05/2016 - 08/2016
Research Intern
Building state-of-the-art outlier detection algorithm with deep autoencoder ensembles.

- Mentors: Saket Sathe, Charu Aggarwal

University of Hannover, Germany 02/2015 - 06/2015
Research Intern
Improving threshold selection by using calibrated probabilities for random forest classifier.

- Mentor: Florian Baumann

University of Birmingham

07/2014 - 09/2014

Research Intern

Learning context-dependent regions from human activities.

- Mentor: Lars Kunze

PUBLICATIONS

* Equal contributions

- [1] **Jinghui Chen**, Quanquan Gu, RayS: A Ray Searching Method for Hard-label Adversarial Attack, in Proc of the 26th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), San Diego, CA, USA 2020.
- [2] **Jinghui Chen**, Dongruo Zhou, Yiqi Tang, Ziyang Yang, Yuan Cao and Quanquan Gu, Closing the Generalization Gap of Adaptive Gradient Methods in Training Deep Neural Networks, in Proc. of 29th International Joint Conference on Artificial Intelligence (IJCAI), Yokohama, Japan, 2020.
- [3] Xiao Zhang*, **Jinghui Chen***, Quanquan Gu and David Evans, Understanding the Intrinsic Robustness of Image Distributions using Conditional Generative Models, In Proc of the 23rd International Conference on Artificial Intelligence and Statistics (AISTATS), Palermo, Sicily, Italy, 2020
- [4] **Jinghui Chen**, Dongruo Zhou, Jinfeng Yi, Quanquan Gu, A Frank-Wolfe Framework for Efficient and Effective Adversarial Attacks, in Proc. of the 34th Conference on Artificial Intelligence (AAAI), New York, New York, USA, 2020
- [5] Pan Xu*, **Jinghui Chen***, Quanquan Gu, Global Convergence of Langevin Dynamics Based Algorithms for Nonconvex Optimization, In Proc. of the 32nd Advances in Neural Information Processing Systems (NeurIPS), Montréal, Canada, 2018 (**Spotlight, Top 3.5%**)
- [6] **Jinghui Chen**, Pan Xu, Lingxiao Wang, Jian Ma, Quanquan Gu, Covariate Adjusted Precision Matrix Estimation via Nonconvex Optimization, in Proc. of the 35th International Conference on Machine Learning (ICML), Stockholm, Sweden, 2018 (**Long Oral Presentation, Top 4.8%**)
- [7] **Jinghui Chen**, Quanquan Gu, Fast Newton Hard Thresholding Pursuit for Sparsity Constrained Nonconvex Optimization, in Proc of the 23rd ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), Halifax, Nova Scotia, Canada, 2017
- [8] **Jinghui Chen**, Saket Sathe, Charu Aggarwal, Deepak Turaga, Outlier Detection with Autoencoder Ensembles, in Proc of 2017 SIAM International Conference on Data Mining (SDM), Houston, Texas, USA
- [9] **Jinghui Chen**, Quanquan Gu, Stochastic Block Coordinate Gradient Descent for Sparsity Constrained Optimization, in Proc of the 32nd International Conference on Uncertainty in Artificial Intelligence (UAI), New York / New Jersey, USA, 2016
- [10] Florian Baumann, **Jinghui Chen**, Karsten Vogt, Bodo Rosenhahn, Improved threshold Selection by using Calibrated Probabilities for Random Forest Classifiers, 12th Conference on Computer and Robot Vision (CRV), Halifax, Nova Scotia, Canada, 2015

WORKSHOP PAPERS

- [1] Dongruo Zhou*, **Jinghui Chen***, Yuan Cao*, Yiqi Tang, Ziyang Yang, Quanquan Gu, On the Convergence of Adaptive Gradient Methods for Nonconvex Optimization, NeurIPS 2020 Workshop on Optimization for Machine Learning.
- [2] **Jinghui Chen**, Quanquan Gu, RayS: A Ray Searching Method for Hard-label Adversarial Attack, ICML 2020 Workshop on Uncertainty & Robustness in Deep Learning.

- [3] **Jinghui Chen**, Quanquan Gu, RayS: A Ray Searching Method for Hard-label Adversarial Attack, ECCV 2020 Workshop on Adversarial Robustness in the Real World.

PREPRINTS

- [1] Estee Y Cramer, **Jinghui Chen**, et al., Evaluation of individual and ensemble probabilistic forecasts of COVID-19 mortality in the US, medRxiv:2021.02.03.21250974
- [2] **Jinghui Chen** Yu Cheng, Zhe Gan, Quanquan Gu and Jingjing Liu, Efficient Robust Training via Backward Smoothing, arXiv:2010.01278, 2020.
- [3] Boxi Wu*, **Jinghui Chen***, Deng Cai, Xiaofei He and Quanquan Gu, Does Network Width Really Help Adversarial Robustness?, arXiv:2010.01279, 2020.
- [4] Katriona Shea, **Jinghui Chen**, et al., COVID-19 reopening strategies at the county level in the face of uncertainty: Multiple Models for Outbreak Decision Support, medRxiv:2020.11.03.20225409.
- [5] COVID-19 Forecast Hub Consortium, **Jinghui Chen**, Ensemble Forecasts of Coronavirus Disease 2019 (COVID-19) in the U.S., medRxiv:2020.08.19.20177493.
- [6] Difan Zou, Lingxiao Wang, Pan Xu, **Jinghui Chen**, Weitong Zhang and Quanquan Gu, Epidemic Model Guided Machine Learning for COVID-19 Forecasts in the United States, medRxiv:2020.05.24.20111989, 2020.
- [7] **Jinghui Chen**, Lingxiao Wang, Xiao Zhang, Quanquan Gu, Robust Wirtinger Flow for Phase Retrieval with Arbitrary Corruption, arXiv:1704.06256, 2017.

TEACHING EXPERIENCES

Teaching Assistant	Spring 2021
<i>Course: Fundamentals of Artificial Intelligence (Undergrad)</i>	UCLA
Teaching Assistant	Winter 2020
<i>Course: Fundamentals of Artificial Intelligence (Undergrad)</i>	UCLA
Teaching Assistant	Fall 2020
<i>Course: Introduction to Algorithms and Complexity (Undergrad)</i>	UCLA
Head Teaching Assistant	Spring 2019
<i>Course: Special Topics in Computer Science: Machine Learning (Undergrad)</i>	UVa
Head Teaching Assistant	Fall 2018
<i>Course: Special Topics in Computer Science: Machine Learning (Undergrad)</i>	UVa
Guest Lecturer	Spring 2018
<i>Course: Machine Learning (Grad)</i>	UVa
Teaching Assistant	Spring 2017
<i>Course: Discrete Event Simulation (Undergrad)</i>	UVa
Teaching Assistant	Fall 2016
<i>Course: Optimization for Machine Learning (Grad)</i>	UVa
Teaching Assistant	Spring 2016
<i>Course: Data Engineering (Undergrad)</i>	UVa
Teaching Assistant	Fall 2015
<i>Course: Practice and Application of Data Science (Grad)</i>	UVa

INVITED TALKS

Understanding and Evaluating Adversarial Robustness in Deep Learning	03/2021
University of Rochester	
Understanding and Evaluating Adversarial Robustness in Deep Learning	02/2021
Illinois Institute of Technology	
Understanding and Evaluating Adversarial Robustness in Deep Learning	

Penn State University	02/2021
Understanding and Evaluating Adversarial Robustness in Deep Learning	
Purdue University	02/2021
Adversarial Robustness in Deep Learning	
University of Texas at Austin	02/2021
Understanding and Evaluating Adversarial Robustness in Deep Learning	
Hong Kong University of Science and Technology	02/2021
Open Problems in Adversarial Robustness	
C3.ai DTI Workshop on The Analytical Foundations of Deep Learning	10/2020
Efficient Robust Training via Backward Smoothing	
Microsoft Dynamics 365 AI Research	09/2020
RayS: A Ray Searching Method for Hard-label Adversarial Attack	
ECCV Workshop on Adversarial Robustness in the Real World	08/2020
ACM SIGKDD Conference on Knowledge Discovery and Data Mining	08/2020
User Similarity Improvements with Deep Neural Networks	
Twitter SF Headquarter	08/2019
Closing the Generalization Gap of Adaptive Gradient Methods in Training Deep Neural Networks	
JD.COM Silicon Valley Research Center	08/2018
Covariate Adjusted Precision Matrix Estimation via Nonconvex Optimization	
International Conference on Machine Learning	07/2018
Outlier Detection with Autoencoder Ensembles	
SIAM International Conference on Data Mining	04/2017
Nonconvex Statistical Learning Methods	
UVA CDDA Workshop	04/2016

ACADEMIC SERVICES

Senior Program Committee

- International Joint Conference on Artificial Intelligence (IJCAI)

Program Committee

- AAAI Conference on Artificial Intelligence (AAAI)
- IEEE International Conference on Big Data (BigData)

Conference Reviewer

- International Conference on Machine Learning (ICML)
- Neural Information Processing Systems (NeurIPS)
- International Conference on Artificial Intelligence and Statistics (AISTATS)
- International Conference on Learning Representations (ICLR)

Journal Reviewer

- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- IEEE Access
- PLOS ONE

- Neural Networks (NEUNET)
- Neurocomputing
- Pattern Recognition Letters (PRLETTERS)
- Machine Learning

AWARDS

- NeurIPS 2020 Student Travel Award 10/2020
- UCLA Graduate Division Fellowship 09/2020
- KDD 2020 Student Travel Award 08/2020
- NeurIPS 2019 Student Travel Award 12/2019
- NeurIPS 2018 Student Travel Award 12/2018
- ICML 2018 Student Travel Award 07/2018
- KDD 2017 Student Travel Award 08/2017
- SDM 2017 Student Travel Award 04/2017
- AEGON-Industrial Fund Scholarship of Responsibility 09/2014
- National Second prize of Contemporary Undergraduate Mathematical Contest in Modeling 10/2013
- Outstanding Student Scholarship in Fundamental Science by Ministry of Education 09/2013
- Zhang Zongzhi Sci-Tech Scholarship 09/2013
- Outstanding Student Scholarship (gold award) 10/2012
- Outstanding Freshmen Scholarship (bronze award) 09/2011

OPEN SOURCE

Core member for project Combating COVID-19
covid19.uclaml.org

Our prediction model has been adopted by the Centers for Disease Control and Prevention (CDC), the California COVID Assessment Tool (CalCat) by California Department of Public Health (CDPH), and the COVID-19 Forecast Hub by the Reich Lab of the University of Massachusetts Amherst.

Media coverage: UCLA Newsroom, FiveThirtyEight, TPM, POLITICO, CBS News

Contributor to COVID-19 Forecast Hub

<https://github.com/reichlab/covid19-forecast-hub>

Data source for the official CDC COVID-19 Forecasting page (<https://www.cdc.gov/coronavirus/2019-ncov/covid-data/forecasting-us.html>).

Main Contributor for Model Robustness, ADBD Leaderboard

<https://github.com/uclaml/RayS>

Main Contributor for Padam Repository

<https://github.com/uclaml/Padam>

Main Contributor for Frank-Wolfe Adversarial Attack Repository

<https://github.com/uclaml/Frank-Wolfe-AdvML>