Chi-Heng (Henry) Lin

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Education

Georgia Institute of Technology, Atlanta, GA 09/2017 - present

Ph.D. in Electrical and Computer Engineering

GPA: 4.0. Selected Courses: advanced digital signal processing, Machine learning theory, nonlinear optimization

Columbia University, New York, NY 09/2015 - 12/2016

M.A. in Statistics

GPA: 4.0. Selected Courses: financial engineering, game theory, probability theory, information theory

National Taiwan University (NTU), Taipei, Taiwan 09/2007 - 06/2013

B.S. & M.S. in Electrical Engineering

GPA: 3.8. Selected Courses: real analysis, communication theory, advanced calculus, stochastic processes

Research Projects

Understanding the role of data augmentations in self-supervised learning, Neural Data Science Lab, Georgia Tech

- Analyze the behavior of the mitigation of double descent phenomenon with data augmentation
- Application to the development of good augmentations in self-supervised learning methodologies

Optimal transport for interpretable data alignment, Neural Data Science Lab, Georgia Tech

- Develop low-rank distribution alignment method for data analysis
- Application to domain adaptation and neural data analysis

Theoretical analysis on momentum acceleration of neural networks, Machine Learning Theory Group, Georgia Tech

- Analyze Polyak's momentum on neural network training
- Application to modern deep learning models

Bayesian Optimization for Modular Black-box Systems with Switching Costs, Neural Data Science Lab, Georgia Tech

- Design fast hyperparameter tuning algorithm leveraging modular structure information.
- Application to large scale multi-stage neuroimaging pipeline

Publications

Under Review:

[1] Mehdi Azabou, Mohammad Gheshlaghi Azar, Ran Liu, Chi-Heng Lin, Erik Christopher Johnson, Kiran Bhaskaran Nair, Max Dabagia, Bernardo Avila Pires, Lindsey Kitchell, Keith B Hengen, William Gray-Roncal, Michal Valko, Eva L Dyer. Mine Your Own vieW: self-supervised learning through across-sample prediction. *Submitted to NeurIPS 2022.*

[2] Ran Liu, Mehdi Azabou, Max Dabagia, Chi-Heng Lin, Mohammad Gheshlaghi Azar, Keith B Hengen, Michal Valko, Eva L Dyer. Drop, swap, and generate: a self-supervised approach for generating neural activity. *Submitted to NeurIPS 2022.*

Accepted:

[1] Chi-Heng Lin, Mehdi Azabou, Eva L Dyer. Making transport more robust and interpretable by moving data through a small number of anchor points. *ICML* 2021.

[2] Chi-Heng Lin, Joseph D Miano, Eva L Dyer. Bayesian optimization for modular black-box systems with switching costs. *UAI* 2021.

[3] Jun-Kun Wang, Chi-Heng Lin, Jacob Abernethy. A Modular Analysis of Provable Acceleration via Polyak's Momentum: Training a Wide ReLU Network and a Deep Linear Network. *ICML* 2021.

[4] Jun-Kun Wang, Chi-Heng Lin, Jacob Abernethy. Escaping Saddle Points Faster with Stochastic Momentum. *ICLR* 2020.

[5] Ebrahim Baktash, Chi-Heng Lin, Xiaodong Wang, Mahmood Karimi. Downlink Linear Precoders based on Statistical CSI for Multi-Cell MIMO-OFDM. *Wireless Communications and Mobile Computing*, 2017.

[6] Chi-Heng Lin, De-Niang Yang, Ji-Tang Lee, Wanjium Liao. Efficient Error-Resilient Multicasting for Multi-View 3D Videos in Wireless Networks. *IEEE GLOBECOM,* Dec 2016.

[7] Fan-Min Tseng and Chi-Heng Lin and Kwang-Cheng Chen. In-network computations of machine-to-machine communications for wireless robotics. *Wireless Pers Commun 2013.*

Miscellaneous

Honors and Awards:

IDEaS-TRIAD Research Scholarship, Georgia Tech.

Davis Fellowships (two times), Department of Statistics in Columbia University.

Scholarship to Study Abroad, Taiwan Ministry of Education.

M&H Bourne Fellowship, ECE Department in Georgia Tech.

Presidential Award, Electrical Engineering in National Taiwan University.

Skills:

Languages:

Chinese (native), English (full professional proficiency)

Programmings:

C/C++, R, Python, MATLAB, Wolfram Mathematica

Work experience

Academia Sinica   **Jan 2016 - Jul 2016**

Research Assistant

Project title: Development of multi-view 3D video broadcast protocol

Accomplishment: Publish "Efficient Error-Resilient Multicasting for Multi-View 3D Videos in Wireless Networks" in *IEEE GLOBECOM* 2016.