

Chaofan Chen

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Summary

Ph.D. Candidate in the Department of Computer Science at Duke University.

I did my undergraduate study in mathematics at the University of Chicago. I joined the Department of Computer Science at Duke University as a Ph.D. stu-

dent in 2014. I am primarily interested in interpretable machine learning, and am currently working with Professor Cynthia Rudin on designing efficient approaches to learning interpretable machine learning models, and improving the interpretability of “black-box” models such as deep neural networks.

Education

Duke University

Ph.D. Candidate in Computer Science

Advisor: Professor Cynthia Rudin

Research Interest: Interpretable Machine Learning

GPA: 3.91/4.00

DURHAM NC, THE UNITED STATES

2014 – Present

The University of Chicago

B.S. with Honors in Mathematics

GPA: 3.74/4.00

CHICAGO IL, THE UNITED STATES

2009 – 2013

Industry Experience

Facebook, Instagram Interests Content Quality Team

Software Engineer Intern, Machine Learning (PhD)

I worked with Instagram Interests Content Quality Team on feature engineering and model training, to reduce the visibility of undesirable content on the Instagram Explore surface.

NEW YORK NY, THE UNITED STATES

May 2019 – August 2019

Research and Teaching Experience

Duke University, The Department of Computer Science

Research Assistant in Prediction Analysis Lab

I am currently working with Professor Cynthia Rudin on designing efficient approaches to learning interpretable machine learning models, and improving the interpretability of “black-box” models such as deep neural networks.

DURHAM NC, THE UNITED STATES

August 2016 – present

Duke University, The Department of Computer Science

Teaching Assistant for CPS 571 Machine Learning

In this teaching assistant position, I led weekly discussions for 30 students, graded homework assignments, and assisted in designing homework and exam problems.

DURHAM NC, THE UNITED STATES

August 2016 – December 2016

Papers

This Looks Like That: Deep Learning for Interpretable Image Recognition

Chaofan Chen, Oscar Li, Alina Barnett, Jonathan Su, Cynthia Rudin

NeurIPS, 2019 (accepted to *spotlight presentation*): <https://arxiv.org/abs/1806.10574>

Featured at Episode 41 of Data Science at Home:

<https://podcast.datascienceathome.com/e/episode-41-1533014067/>

Interpretable Image Recognition with Hierarchical Prototypes

Peter Hase, Chaofan Chen, Oscar Li, Cynthia Rudin

AAAI-HCOMP, 2019: <https://arxiv.org/abs/1906.10651>

An Interpretable Model with Globally Consistent Explanations for Credit Risk

Chaofan Chen, Kangcheng Lin, Cynthia Rudin, Yaron Shaposhnik, Sijia Wang, Tong Wang

NIPS 2018 Workshop on Challenges and Opportunities for AI in Financial Services:

<https://arxiv.org/abs/1811.12615>

Winner of the FICO Recognition Award for the FICO Explainable Machine Learning Challenge, 2018.

An Optimization Approach to Learning Falling Rule Lists

Chaofan Chen, Cynthia Rudin

AISTATS 2018: <https://arxiv.org/abs/1710.02572>

Deep Learning for Case-Based Reasoning through Prototypes: A Neural Network that Explains Its Predictions

Oscar Li, Hao Liu, Chaofan Chen, Cynthia Rudin

AAAI 2018: <https://arxiv.org/abs/1710.04806>

Applications and Projects

An Interpretable Model for Credit Risk Performance

Chaofan Chen, Kangcheng Lin, Cynthia Rudin, Yaron Shaposhnik, Sijia Wang, Tong Wang

In this project, I designed a two-layer additive risk model for predicting credit risk. This model is a combination of the traditional additive credit scoring model and the feedforward neural network, and is fully transparent and globally interpretable. We submitted this project to the FICO Explainable Machine Learning Challenge: <https://community.fico.com/s/explainable-machine-learning-challenge>
Project website: <http://dukedatasciencefico.cs.duke.edu/>

Professional Activities

Conference and Workshop Reviewing: MLHC 2019, ACM FAT 2019, ICML Workshop on Human Interpretability in Machine Learning (WHI) 2018

Skills and Interest

Technical Expertise: Programming in Python. Familiarity with NumPy, Tensorflow, and PyTorch. Experience with R, MATLAB, C, Java, SQL, and Spark.

Natural Languages: English, Mandarin Chinese, German (*intermediate*), and French (*elementary*).

Awards

Outstanding Ph.D. Preliminary Exam

September 2018

Outstanding Research Initiation Project

September 2017