Violet (Xinying) Chen

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EDUCATION

Carnegie Mellon University — Pittsburgh, PA
Ph.D. in Operations Research — (Expected) May 2022
Dissertation: Fairness Methods in Optimization and Artificial Intelligence
Committee: Hoda Heidari, John Hooker (chair), Fatma Kılınç-Karzan, Alec Morton
M.S. in Operations Research — May 2019

Georgia Institute of Technology — Georgia, GA
B.S. in Applied Mathematics — May 2017
B.S. in Business Administration — May 2017

RESEARCH INTERESTS

Fairness modeling in Optimization, Fairness and Ethics of Artificial Intelligence, Data-driven Optimization, Preference Learning

PUBLICATIONS

Published Papers

Combining Leximax Fairness and Efficiency in a Mathematical Programming Model, V. Chen, J.N. Hooker. *European Journal of Operational Research. 2021.*

A Just Approach Balancing Rawlsian Leximax Fairness and Utilitarianism, V. Chen, J.N. Hooker. *AAAI/ACM Conference on AI, Ethics, and Society. 2020.*

Papers under Review

A Guide to Formulating Equity and Fairness in an Optimization Model, V. Chen, J.N. Hooker. *Submitted to Annals of Operations Research. August 2021.*

Preprints in Preparation

Online Convex Optimization Perspective for Learning from Dynamically Revealed Preferences, V. Chen, F.Kılınç-Karzan. ArXiv: 2008.10460.

Welfare-based Fairness through Optimization, V. Chen, J.N. Hooker. ArXiv: 2102.00311.

Working Papers

Specialized Decomposition Methods for Training Fair SVMs, V. Chen.

Eliciting Dynamic Moral Preferences, V. Chen, J. Williams, H. Heidari, D. Leben.

HONORS AND AWARDS

Egon Balas Award for Best Student Paper in Operations Research — March 2019
William Larimer Mellon Fellowship — August 2017–May 2022

PRESENTATIONS

Fairness through Optimization in Artificial Intelligence Applications
INFORMS Annual Meeting, Anaheim, CA — October 2021

Formulate, Achieve and Understand Welfare-based Fairness
CMU Fairness, Accountability, Transparency and Ethics Summer Series, Virtual — July 2021

Online Convex Optimization Perspective for Learning from Dynamically Revealed Preferences
INFORMS Annual Meeting, Virtual — November 2020

Combining Leximax Fairness and Efficiency in a Mathematical Programming Model
Poster, AAAI/ACM Conference on AI, Ethics, and Society, New York, NY — February 2020
INFORMS Annual Meeting, Seattle, WA — October 2019

TEACHING EXPERIENCE

Instructor, Carnegie Mellon University

Operations Management, 70-371 — Hybrid, Spring 2020
Undergraduate core course. Key topics: process analysis, queuing theory, inventory model, supply chain, operations strategy.
Designed course materials; taught bi-weekly lectures; prepared homework and exams; transitioned course into virtual format with live lectures.

Teaching Assistant, Carnegie Mellon University

Optimization, 45-751 — Virtual, Spring 2021 (as Head TA); Fall 2019
MBA core course. Key topics: linear programming, network models, integer programming, nonlinear programming.
Guided and coordinated TA grading and office hour; prepared and graded homework and exams.

Probability and Statistics, 45-750/46-880 — Virtual, Fall 2020; Hybrid, Fall 2019
MBA/MSBA core course. Key topics: random variables, normal distribution, hypothesis testing, regression, inference.
Prepared homework solutions; designed bi-weekly online quizzes; led office hours.

Business Networks, 45-951 — Virtual, Fall 2020
MBA elective. Key topics: social networks, auctions in networks, information networks, information cascade.
Verified homework and quizzes; led office hours.

Linear Programming, 47-834 — Fall 2019, Fall 2018
PhD core course. Key topics: linear optimization modeling, theory and algorithms.

Graded homework and exams; gave substitute lecture on column generation; led office hours.

Convex Optimization, 47-851 Spring 2019

PhD core course. Key topics: duality, structured conic optimization, algorithms for large-scale convex optimization.

Graded homework; led office hours.

Optimization for Business, 70-257 Spring 2019

Undergraduate core course. Key topics: linear programming, network models, dynamic programming, integer programming.

Taught weekly recitations; prepared and graded homework and exams.

ACTIVITIES

Mechanism Design for Social Good (MD4SG) working group on Discrimination and Equality in Algorithmic Decision-making — Fall 2021–Present

CMU Fairness, Ethics, Accountability, and Transparency Reading Group, Hybrid — Fall 2019–Present

ACM FAccT 2021 Doctoral Consortium, Virtual — March 2021

SERVICES

Ad-Hoc Journal and Conference Review

INFORMS Journal on Computing, NeurIPS 2021, ICML 2021, CP 2021

Conference and Panel Organizing

YinzOR 2021 Student Conference, Virtual — August 2021

Organization committee, job market panel moderator

CMU Women in Academia Panel, Virtual — December 2020

Organization committee chair

YinzOR 2019 Student Conference, Pittsburgh, PA — August 2019

Conference co-chair

Professional Organization

INFORMS Education Strategy Committee — October 2019–Present

CMU INFORMS Chapter

President, Awarded Magna Cum Laude Chapter — June 2020–June 2021

Board member — June 2020–Present

SKILLS

Programming/Software: Gurobi, Mosek, Python (numpy, scipy, gym, matplotlib), C++, MATLAB, Tableau

Languages: English (native), Chinese (native), Japanese (proficient)

REFERENCES

John Hooker, Ph.D.
T.Jerome Holleran Professor of Business Ethics and Social Responsibility
Professor of Operations Research
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