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 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. *Target submission: October 2021.*

Welfare-based Fairness through Optimization, V. Chen, J.N. Hooker. ArXiv: 2102.00311. *Target submission: December 2021.*

Working Papers

Block Coordinate Gradient Descent Methods for Fair SVMs, V. Chen.

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

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 — (Scheduled) 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 quality evaluation: 4.19/5.

21 out of 24 enrolled students responded.

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 — June 2020–June 2021
Board member — June 2020–Present

SKILLS

Programming: Gurobi, Mosek, Python, C++, MATLAB
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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Fatma Kılınç-Karzan, Ph.D.
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