

Yu-Jui Huang

CONTACT INFORMATION	Department of Applied Mathematics University of Colorado Boulder, CO 80309, USA	Phone: +1 734-272-8869 E-mail: yujui.huang@colorado.edu Website: www.yujui-huang.com
RESEARCH AREAS	Mathematical finance, stochastic control, optimal stopping, mathematics of machine learning.	
EMPLOYMENT	University of Colorado , Boulder, USA <i>Associate Professor</i> , Department of Applied Mathematics <i>Assistant Professor</i> , Department of Applied Mathematics	2024–present 2016–2024
	Dublin City University , Dublin, Ireland <i>Lecturer in Financial Math.</i> , School of Mathematical Sciences	2013–2016
EDUCATION	University of Michigan , Ann Arbor, USA (2008–2013) <i>Ph.D., Applied and Interdisciplinary Mathematics</i> <ul style="list-style-type: none">• Advisor: Prof. Erhan Bayraktar• Dissertation: “Topics in Stochastic Control with Applications to Finance” National Taiwan University , Taipei, Taiwan (2002–2007) <i>B.S., Mathematics</i> <i>B.B.A., Finance</i>	May 2013 June 2007 June 2007
GRANTS	National Science Foundation, Division of Mathematical Sciences <i>Topics in Stochastic Control: Finance, Epidemics, and Machine Learning</i> DMS-2109002 , PI, \$273,374	2021–2025
	National Science Foundation, Division of Mathematical Sciences <i>Stochastic Games for Intergenerational Equity in Mathematical Finance</i> DMS-1715439 , PI, \$186,166	2017–2021
AWARDS	2021 SIAM SIGEST Award Awarded by Society for Industrial and Applied Mathematics (SIAM) for the article “ American Student Loans: Repayment and Valuation ” in SIAM Journal on Financial Mathematics. 2015 Bruti-Liberati Fellow Quantitative Finance Research Centre, University of Technology Sydney	
SUBMITTED PAPERS	<ul style="list-style-type: none">• Yu-Jui Huang and Zachariah Malik (2024) Generative Modeling by Minimizing the Wasserstein-2 Loss• Zachariah Malik and Yu-Jui Huang (2024) A Differential Equation Approach for Wasserstein GANs and Beyond• Yu-Jui Huang and Li-Hsien Sun (2023) Partial Information Breeds Systemic Risk• Yu-Jui Huang, Zhenhua Wang, and Zhou Zhou (2022) Convergence of Policy Iteration for Entropy-Regularized Stochastic Control Problems• Arash Fahim, Yu-Jui Huang, and Saeed Khalili (2019) Generalized Duality for Model-Free Superhedging given Marginals	

- Erhan Bayraktar, Yu-Jui Huang, Zhenhua Wang, and Zhou Zhou (2024)
[Relaxed Equilibria for Time-Inconsistent Markov Decision Processes](#)
Mathematics of Operations Research, published online (October 2024).
- Joshua Aurand and Yu-Jui Huang (2023)
[Epstein-Zin Utility Maximization on a Random Horizon](#)
Mathematical Finance, Vol. 33, Issue 4, pp. 1370–1411.
- Yu-Jui Huang and Yuchong Zhang (2023)
[GANs as Gradient Flows that Converge](#)
Journal of Machine Learning Research, Vol. 24, No. 217, pp. 1–40.
- Paolo Guasoni and Yu-Jui Huang (2022)
[Minimizing the Repayment Cost of Federal Student Loans](#)
SIAM Review, Vol. 64, No. 3, pp. 689–709.
- Yu-Jui Huang and Zhou Zhou (2022)
[A Time-Inconsistent Dynkin Game: from Intra-personal to Inter-personal Equilibria](#)
Finance and Stochastics, Vol. 26, Issue 2, pp 301–334.
- Joshua Aurand and Yu-Jui Huang (2021)
[Mortality and Healthcare: A Stochastic Control Analysis under Epstein-Zin Preferences](#)
SIAM Journal on Control and Optimization, Vol. 59, No. 5, pp 4051–4080.
- Yu-Chih Huang, Yu-Jui Huang, and Shih-Chun Lin (2021)
[Asymptotic Optimality in Byzantine Distributed Quickest Change Detection](#)
IEEE Transactions on Information Theory, Vol. 67, No. 9, pp 5942–5962.
- Yu-Jui Huang and Xiang Yu (2021)
[Optimal Stopping under Model Ambiguity: A Time-Consistent Equilibrium Approach](#)
Mathematical Finance, Vol. 31, Issue 3, pp 979–1012.
- Yu-Jui Huang and Zhou Zhou (2021)
[Strong and Weak Equilibria for Time-Inconsistent Stochastic Control in Continuous Time](#)
Mathematics of Operations Research, Vol. 46, Issue 2, pp 428–451.
- Yu-Jui Huang and Zhenhua Wang (2021)
[Optimal Equilibria for Multi-Dimensional Time-Inconsistent Stopping Problems](#)
SIAM Journal on Control and Optimization, Vol. 59, No. 2, pp 1705–1729.
- Paolo Guasoni, Yu-Jui Huang, and Saeed Khalili (2021)
[American Student Loans: Repayment and Valuation](#)
SIAM Journal on Financial Mathematics, Vol. 12, No. 2, pp SC-16–SC-30.
- Yu-Jui Huang and Zhou Zhou (2020)
[Optimal Equilibria for Time-Inconsistent Stopping Problems in Continuous Time](#)
Mathematical Finance, Vol. 30, Issue 3, pp 1103–1134.
- Yu-Jui Huang, Adrien Nguyen-Huu, and Xunyu Zhou (2020)
[General Stopping Behaviors of Naïve and Non-Committed Sophisticated Agents, with Application to Probability Distortion](#)
Mathematical Finance, Vol. 30, Issue 1, pp 310–340.
- Paolo Guasoni and Yu-Jui Huang (2019)
[Consumption, Investment, and Healthcare with Aging](#)
Finance and Stochastics, Vol. 23, Issue 2, pp 313–358.
- Yu-Jui Huang and Saeed Khalili (2019)
[Optimal Consumption in the Stochastic Ramsey Problem without Boundedness Constraints](#)
SIAM Journal on Control and Optimization, Vol. 57, No. 2, pp 783–809.
- Yu-Jui Huang and Zhou Zhou (2019)
[The Optimal Equilibrium for Time-inconsistent Stopping Problems - the Discrete-Time Case](#)
SIAM Journal on Control and Optimization, Vol. 57, No. 1, pp 590–609.
- Yu-Jui Huang and Adrien Nguyen-Huu (2018)

[Time-consistent Stopping under Decreasing Impatience](#)
Finance and Stochastics, Vol. 22, Issue 1, pp 69–95.

- Xiaoshan Chen, Yu-Jui Huang, Qingshuo Song, and Chao Zhu (2017)
[The Stochastic Solution to a Cauchy Problem for Degenerate Parabolic Equations](#)
Journal of Mathematical Analysis and Applications, Vol. 451, Issue 1, pp 448–472.
- Arash Fahim and Yu-Jui Huang (2016)
[Model-independent Superhedging under Portfolio Constraints](#)
Finance and Stochastics, Vol. 20, Issue 1, pp. 51–81.
- Erhan Bayraktar, Yu-Jui Huang, and Zhou Zhou (2015)
[On Hedging American Options under Model Uncertainty](#)
SIAM Journal on Financial Mathematics, Vol. 6, No. 1, pp. 425–447.
- Erhan Bayraktar and Yu-Jui Huang (2013)
[Robust Maximization of Asymptotic Growth under Covariance Uncertainty](#)
Annals of Applied Probability, Vol. 23, No. 5, pp. 1817–1840.
- Erhan Bayraktar and Yu-Jui Huang (2013)
[On the Multi-Dimensional Controller-and-Stopper Games](#)
SIAM Journal on Control and Optimization, Vol. 51, No. 2, pp. 1263–1297.
- Erhan Bayraktar, Yu-Jui Huang, and Qingshuo Song (2012)
[Outperforming the Market Portfolio with a Given Probability](#)
Annals of Applied Probability, Vol. 22, No. 4, pp. 1465–1494.

Conference articles:

- Yu-Jui Huang, Shih-Chun Lin, Yu-Chih Huang, Guan-Huei Lyu, Hsin-Hua Shen, and Wan-Yi Lin (2023)
[On Characterizing Optimal Wasserstein GAN Solutions for Non-Gaussian Data](#)
2023 IEEE International Symposium on Information Theory, pp. 909–914.
- Yu-Chih Huang, Shih-Chun Lin, and Yu-Jui Huang (2019)
[A Tight Converse to the Asymptotic Performance of Byzantine Distributed Sequential Change Detection](#)
2019 IEEE International Symposium on Information Theory, pp. 2404–2408.
- Yu-Jui Huang, Shih-Chun Lin, and Yu-Chih Huang (2019)
[On Byzantine Distributed Sequential Change Detection with Multiple Hypotheses](#)
2019 IEEE International Symposium on Information Theory, pp. 2209–2213.

RESEARCH VISITS	University of Technology Sydney, Sydney, Australia Quantitative Finance Research Centre	December 2015
	City University of Hong Kong, Hong Kong, China Department of Mathematics	May–June 2013
INVITED TALKS	• 8 th Asian Quantitative Finance Conference Taipei, Taiwan	August 10, 2024
	• Seminar at Institute of Communication Engineering National Taiwan University	August 7, 2024
	• Seminar at Institute of Communication Engineering National Yang Ming Chiao Tung University	August 5, 2024
	• Seminar at Graduate Institute of Statistics National Central University	July 2, 2024
	• Financial Mathematics Seminar The Hong Kong Polytechnic University	May 29, 2024
	• Columbia-NYU Financial Engineering Colloquium	

New York University	March 20, 2024
• <i>SIAM Activity Group on FME Talk Series</i> Virtual seminar	December 14, 2023
• <i>Seminar at Graduate Institute of Communication Engineering</i> National Taiwan University	August 7, 2023
• <i>Probability Seminar</i> National Central University	June 9, 2023
• <i>Seminar at Graduate Institute of Statistics</i> National Central University	June 6, 2023
• <i>Mathematical Finance Colloquium</i> University of Southern California	March 27, 2023
• <i>Financial Mathematics Seminar</i> Florida State University	February 23, 2023
• <i>Seminar at Graduate Institute of Communication Engineering</i> National Taiwan University	August 4, 2022
• <i>Hong Kong-Singapore Joint Seminar in Financial Mathematics/Engineering</i> International online seminar	July 21, 2022
• <i>SIAM Annual Meeting</i> Pittsburgh, Pennsylvania	July 13, 2022
• <i>Mathematical Finance, Stochastic Analysis, and Machine Learning Seminar</i> Illinois Institute of Technology	April 5, 2022
• <i>One World Optimal Stopping and Related Topics Seminar</i> Virtual seminar	December 8, 2021
• <i>SIAM Annual Meeting</i> Virtual conference	July 23, 2021
• <i>Stochastics and Finance Seminar</i> University of Sydney	May 27, 2021
• <i>Control and Optimization Seminar</i> University of Connecticut	March 29, 2021
• <i>AMS Spring Eastern Meeting</i> Virtual conference	March 20, 2021
• <i>Financial/Actuarial Mathematics Seminar</i> University of Michigan	February 24, 2021
• <i>Analysis Seminar</i> University of Oklahoma	November 16, 2020
• <i>INFORMS Annual Meeting</i> Virtual conference	November 10, 2020
• <i>SIAM Conference on Control and Its Applications</i> Chengdu, China	June 19, 2019
• <i>SIAM Conference on Financial Mathematics and Engineering</i> Toronto, Canada	June 5, 2019
• <i>Financial Mathematics Seminar</i> Dublin City University, Dublin, Ireland	January 29, 2019
• <i>Systems Engineering and Engineering Management Seminar</i> The Chinese University of Hong Kong	January 14, 2019
• <i>AIMS Conference on Dynamical Systems, Differential Equations and Applications</i> Taipei, Taiwan	July 6, 2018
• <i>Symposium on Optimal Stopping — in Memory of Larry Shepp</i> Rice University	June 28, 2018

- *Applied Mathematics Colloquium*
The Hong Kong Polytechnic University May 21, 2018
- *Byrne Workshop on Stochastic Analysis in Finance and Insurance* (Plenary speaker)
University of Michigan May 9, 2018
- *Mathematical Finance and Applied Probability Seminar*
University of Connecticut April 11, 2018
- *Mathematical Finance and Probability Seminar*
Rutgers University March 20, 2018
- *Probability Seminar*
University of Colorado, Boulder November 16, 2017
- *Mathematical Finance Seminar*
Columbia University November 9, 2017
- *Seminar on Financial Mathematics*
National Center for Theoretical Sciences, Taipei, Taiwan July 11, 2017
- *Stochastic Analysis and Financial Mathematics Common*
Worcester Polytechnic Institute March 27, 2017
- *SIAM Conference on Financial Mathematics and Engineering*
Austin, Texas November 19, 2016
- *Mathematical Finance Colloquium*
University of Southern California September 26, 2016
- *Stochastics Seminar*
National Central University, Taoyuan, Taiwan June 3, 2016
- *Probability Seminar*
Academia Sinica, Taipei, Taiwan May 30, 2016
- *Mathematical Finance Seminar*
Boston University February 1, 2016
- *Statistics Seminar*
University of Toronto January 28, 2016
- *Special Mathematics Departmental Seminar*
Rutgers University January 26, 2016
- *Nicola Bruti-Liberati Lecture*
Quantitative Methods in Finance Conference (QMF), Sydney December 18, 2015
- *Special Applied Mathematics Departmental Seminar*
University of Colorado at Boulder December 1, 2015
- *Nomura Seminar in Mathematical Finance*
University of Oxford June 4, 2015
- *ORFE Colloquium*
Princeton University January 30, 2015
- *Mathematics Colloquium*
Florida State University January 16, 2015
- *Financial Mathematics Seminar*
Florida State University January 15, 2015
- *Seminar on Probability and Statistics with Applications*
National Chiao Tung University, Hsinchu, Taiwan January 5, 2015
- *One-Day Course in Financial Mathematics*
National Tsing Hua University, Hsinchu, Taiwan December 17, 2014
- *Mathematical Finance Seminar*
The Hebrew University of Jerusalem May 26, 2014
- *Joint Financial Mathematics and Risk Stochastics Seminar*

	London School of Economics	March 3, 2014
	• <i>Mathematics Colloquium</i> Dublin City University, Dublin, Ireland	October 24, 2013
	• <i>Probability Seminar</i> Academia Sinica, Taipei, Taiwan	June 27, 2013
	• <i>Mathematical Finance Seminar</i> University of Texas at Austin	April 12, 2013
	• <i>AMS Sectional Meeting (Special Session on Financial Mathematics)</i> Boston College, Chestnut Hill	April 7, 2013
	• <i>Probability and Statistics Seminar</i> Wayne State University, Detroit	March 20, 2013
	• <i>SIAM Conference on Financial Mathematics and Engineering</i> Minneapolis	July 9 & 10, 2012
	• <i>Financial and Actuarial Mathematics Seminar</i> University of Michigan	September 29, 2011
	• <i>7th International Congress on Industrial and Applied Mathematics (ICIAM)</i> Vancouver	July 21, 2011
CONTRIBUTED TALKS	• <i>IEEE International Symposium on Information Theory (ISIT)</i> Taipei, Taiwan	June 27, 2023
	• <i>9th World Congress of the Bachelier Finance Society</i> New York, USA	July 19, 2016
	• <i>8th World Congress of the Bachelier Finance Society</i> Brussels, Belgium	June 5, 2014
	• <i>AMS Sectional Meeting (Special Session on PDE and stochastic Analysis)</i> Temple University, Philadelphia	October 13, 2013
	• <i>Probability, Control and Finance, a conference in honor of Ioannis Karatzas</i> Columbia University	June 5, 2012
	• <i>Workshop on Stochastic Analysis in Finance and Insurance</i> University of Michigan	May 18, 2011
	• <i>Mathematical Finance and Partial Differential Equations Conference</i> Rutgers University	December 10, 2010
	• <i>6th World Congress of the Bachelier Finance Society</i> Toronto, Canada	June 23, 2010

STUDENTS

University of Colorado

Ph.D. students (degree; current position):

- Zachariah Malik (Ph.D. student in Applied Mathematics, defense expected Spring 2026).
- Joshua Aurand (Ph.D. in Applied Mathematics, May 2020; Machine Learning Engineer–Robotics, Verus Research).
- Zhenhua Wang (Ph.D. in Mathematics, May 2020; Assistant Professor, Mathematics, Shandong University).
- Saeed Khalili (Ph.D. in Mathematics, Dec. 2019; Assistant Professor, Mathematics, Fort Lewis College).

Master's students (degree; current position):

- Dennis Krimer (MS in Applied Math, thesis defended January 2023).
- Li-Yin Young (Professional MS in Applied Math, May 2020; Software/AI Engineer, NOAA).

Undergraduate research students:

- Henry Dyer on the project “GARCH Based Risk Estimation in Emerging Market Foreign Exchange Rates” (Arts and Sciences Honors Program) **August 2023–April 2024**
- Iker Acha on the project “Gradient Flow Approach for Generative Adversarial Networks” (Discovery Learning Apprenticeship Program) **August 2022–April 2023**
- Trevor McCord on the project “Merton’s Problem with Human Capital Investment” (Discovery Learning Apprenticeship Program) **August 2016–April 2017**

Dublin City University

Internship students:

Monitored the progress of internship students in financial firms. Duties included communications/meetings with students and their supervisors, and on-site visits to the companies.

- Michael Flynn, Sean McCarthy, and Thomas Quinn
@ Office of the Comptroller and Auditor General, Ireland **February–September 2016**
- Adelle Heskin
@ AIG Asset Management **February–September 2015**
- Damian Murphy and Eoin Phelan
@ SCOR Global Life Reinsurance Ireland **February–September 2015**
- Jenifer Black
@ Hannover Re (Ireland) Limited **February–September 2014**

SERVICE

Academia

Panelist:

- National Science Foundation, Division of Mathematical Sciences.

Associate Editor:

- Proceedings of 2018 IEEE Conference on Decision and Control (CDC 2018).

Organizer of conferences/symposiums:

- Organized the minisymposium “Advances in Stochastic Control with Financial Applications” in SIAM Annual Meeting (virtual, July 19-23, 2021).
- Organized the minisymposium “Advances in Stochastic Control and Machine Learning” in SIAM Conference on Financial Mathematics and Engineering (virtual, June 1-4, 2021).
- Organized the minisymposium “New Developments on Optimization under Time-inconsistency” in SIAM Conference on Financial Mathematics and Engineering (Toronto, July 4-7, 2019).
- Co-organized (with Chao Zhu) the special session “Recent Developments in Stochastic Analysis, Stochastic Control and Related Fields” in AIMS Conference on Dynamical Systems, Differential Equations and Applications (Taipei, Taiwan, July 5-9, 2018).
- Co-organized (with Adrien Nguyen-Huu) the minisymposium “Stochastic Control and Stopping under Time Inconsistency” in SIAM Conference on Financial Mathematics and Engineering (Austin, Texas, November 17-19, 2016).
- Co-organized (with Arash Fahim) the minisymposium “Robust Hedging and Pricing under Model Uncertainty” in SIAM Conference on Financial Mathematics and Engineering (Chicago, November 13-15, 2014).

Referee for peer-reviewed journals:

- Advances in Applied Probability
- Annals of Applied Probability
- Applied Mathematics and Optimization
- Finance and Stochastics
- Games and Economic Behavior
- Journal of Applied Probability

- Journal of Industrial and Management Optimization
- Journal of Mathematical Analysis and Applications
- Management Science
- Mathematical Finance
- Mathematics and Financial Economics
- Mathematics of Operations Research
- Methodology and Computing in Applied Probability
- Nonlinear Analysis: Hybrid Systems
- Operations Research Letters
- Probability, Uncertainty and Quantitative Risk
- SIAM Journal on Control and Optimization
- SIAM Journal on Financial Mathematics
- Stochastic Processes and their Applications

Referee for book series:

- Springer Finance

University of Colorado

Department of Applied Mathematics:

- Served on Graduate Committee (August 2019-December 2023)
- Served on Undergraduate Committee (August 2016-May 2019)
- Served on Probability/Statistics Preliminary Exam Committee (August 2023, August 2022, January 2022, August 2020, August 2019, August 2018, January 2017)
- Served on Applied Analysis Preliminary Exam Committee (August 2017)

Outreach

Boulder STEM Camp:

- Taught “Introduction to Machine Learning” to high school and middle school students (at Trail Ridge Middle School, Longmont, Colorado, on June 22, 2018).

STEM School Highlands Range:

- Enriched the middle school’s science program by introducing how mathematics matters to finance and economics, and assisted a seventh-grade student to complete a project on mathematical finance and economics.

TEACHING

University of Colorado Boulder

- APPM 6570 *Stochastic Differential Equations* (Spring 2021)
- APPM 6560 *Measure-Theoretic Probability* (Spring 2023, Spring 2022)
- APPM 4530/5530 *Stochastic Analysis for Finance* (Fall 2023, Fall 2022, Fall 2021, Fall 2020, Fall 2019, Fall 2018, Fall 2017)
- APPM 4120/5120 *Operations Research* (Spring 2023, Spring 2021, Spring 2017)
- APPM 3170 *Discrete Applied Mathematics* (Spring 2022, Spring 2020)
- APPM 1360 *Calculus II for Engineers* (Fall 2019, Spring 2017, Fall 2016)

Dublin City University

- *Probability and Finance I* (Fall 2015)
A measure-theoretic probability course for graduate students, with common financial models introduced as applications.
- *Probability I* (Spring 2016, Spring 2015, Spring 2014)
An introductory probability course for undergraduate students.
- *Data Analysis and Statistics* (Fall 2014)
A statistics course for biological engineering students, with a focus on analyzing biological and medical data.

- *Statistics I* (Fall 2013)

An introductory statistics course for undergraduate students.

University of Michigan

- *Integral Calculus* (Fall 2011, Winter 2010).
- *Differential Calculus* (Fall 2009, Winter 2009).
- *Pre-calculus* (Fall 2008).

LAST UPDATED October 23, 2024