Song Yao

Department of Mathematics
University of Pittsburgh
404 Thackeray Hall
Pittsburgh, PA 15260

Phone: 412-624-1428
songyao@pitt.edu
www.pitt.edu/~songyao

RESEARCH INTEREST

Mathematical finance, Applied probability, Stochastic analysis, Stochastic control

PROFESSIONAL EXPERIENCE

University of Pittsburgh, Department of Mathematics	Tenure-track Assistant Professor
University of Michigan, Department of Mathematics	Term Assistant Professor

EDUCATION

PhD in Mathematics — Purdue University
Dissertation: *Quadratic Nonlinear Expectations and Convex Risk Measures.*
Thesis Advisor: Prof. Jin Ma

MS in Computational Finance — Purdue University

MS in Mathematics — Fudan University, China
Thesis: *Conservation Law and a Liouville theorem for harmonic maps with potential*.
Advisor: Prof. Yuanlong Xin

BS in Mathematics — Fudan University, China

RESEARCH GRANT

National Science Foundation, Applied Mathematics, **DMS-1613208:**

Some Mathematical Finance Problems under Model Uncertainty, 2016-2019 (PI).

PUBLICATIONS

1. Conservation Law and Other Properties of Harmonic Maps with Potential. *Journal of Fudan University* (*Natural Science*), 41(5), 570-576, 2002.

2. Representation Theorems for Quadratic *F*-Consistent Nonlinear Expectations (with Ying Hu, Jin Ma and Shige Peng). *Stochastic Processes and their Applications,* 118(9), 1518-1551, 2008.

3. On Quadratic g-Evaluations/Expectations and Related Analysis (with Jin Ma). *Stochastic Analysis and Applications,* 28(4),711-734, 2010.

4. Optimal Stopping for Non-linear Expectations-Part I (with Erhan Bayraktar). *Stochastic Processes and their Applications,* 121(2), 185-211, 2011.

5. Optimal Stopping for Non-linear Expectations-Part II (with Erhan Bayraktar). *Stochastic Processes and their Applications,* 121(2), 212-264, 2011.

6. Optimal Stopping for Dynamic Convex Risk Measures (with Erhan Bayraktar and Ioannis Karatzas). Illinois Journal of Mathematics, 54, 1025-1067, 2010.

7. Quadratic Reflected BSDEs with Unbounded Obstacles (with Erhan Bayraktar). *Stochastic Processes and their Applications,* 122 (4), 1155–1203, 2012

8. A Weak Dynamic Programming Principle for Zero-Sum Stochastic Differential Games with Unbounded Controls (with Erhan Bayraktar), *SIAM Journal on Control and Optimization*, 51 (3), 2036-2080, 2013

9. On the Robust Optimal Stopping Problem (with Erhan Bayraktar), *SIAM Journal on Control and Optimization*, 52(5), 3135-3175, 2014

10. Doubly Reflected BSDEs with Integrable Parameters and Related Dynkin Games (with Erhan Bayraktar), *Stochastic Processes and Their Applications*, 125 (12), 4489–4542, 2015

11. Optimal Stopping with Random Maturity under Nonlinear Expectations (with Erhan Bayraktar), *Stochastic Processes and their Applications*, 127 (8), 2586–2629, 2017.

12. On the Robust Dynkin Game (with Erhan Bayraktar), *Annals of Applied Probability*, 27 (3), 1702–1755, 2017.

13. L^p Solutions of Backward Stochastic Differential Equations with Jumps, *Stochastic Processes and their Applications*, 127 (11), 3465–3511, 2017.

14. L^p Solutions of Reflected Backward Stochastic Differential Equations with Jumps, submitted.

15. On g-Expectations with L^p Domain under Jump Filtration, *Stochastic Analysis and Applications*, 36 (1), 40–102, 2018.

16. Jump-Filtration Consistent Nonlinear Expectations with L^p Domain (with Jing Liu), *Applied Mathematics and Optimization*, 79 (2019), no. 1, 87–129

17. Dynamic Programming Principles for Optimal Stopping with Expectation Constraint (with Erhan Bayraktar), submitted.

PRESENTATIONS

- Probability/Math Finance Seminar, *Carnegie Mellon University*, Dec 2017.
- SIAM Conference on Control and its Applications, *Pittsburgh*, July 2017 (contributed talk).
- Probability Seminar, University of Rochester, April 2017.
- SIAM Conference on Financial Mathematics and Engineering, *Austin*, Nov 2016 (contributed talk).
- Mathematics Colloquium, *University of Pittsburgh*, Oct 2016.
- Joint Mathematics Meeting, *Seattle*, Jan 2016 (contributed talk).
- Financial/Actuarial Mathematics Seminar, *University of Michigan*, Dec 2015.
- Actuarial and Financial Mathematics Seminar, *University of Pittsburgh*, April 2015.
- Mathematical Finance Seminar, *University of Texas at Austin*, April 2015.
- Mathematical Finance Colloquium, *University of Southern California*, April 2014.
- INFORMS Annual meeting, *Minneapolis*, October 2013 (contributed talk).
- INFORMS Applied Probability Society Conference, *Costa Rica*, July 2013 (contributed talk).
- Financial Mathematics Seminar, *Penn State University*, Nov 2012.
- AMS sectional meeting, *Akron University*, Oct 2012 (contributed talk).
- Probability/Math Finance Seminar, *Carnegie Mellon University*, Dec 2011.
- Mathematics Colloquium, *University of Pittsburgh*, Feb 2011.
- Mathematics Colloquium, *Louisiana State University*, Jan 2011.
- Mathematics Colloquium, *Wayne State University*, Dec 2010.
- SIAM Conference on Financial Mathematics and Engineering, *San Francisco*, Nov 2010 (contributed talk).
- Financial/Actuarial Mathematics Seminar, *University of Michigan*, Oct 2010.
- 6th World Congress of the Bachelier Finance Society, *Toronto*, June 2010 (contributed talk).
- Financial/Actuarial Mathematics Seminar, *University of Michigan*, Dec 2009.
- Joint Math Finance Colloquium and Probability/ Statistics Seminar, *University of Southern California*, Oct 2009.
- Financial/Actuarial Math Seminar, *University of Michigan*, Sept 2008.

EDITORIAL BOARD

Associate Editor of journal *International Journal of Data Analytics*

CONFERENCE ORGANIZATION

Minisymposium on High Frequency Trading, University of Pittsburgh, March 25-26, 2017

TEACHING EXPERIENCE

- **Instructor**

1. **Graduate Courses**

Jan 2020-April 2020	University of Pittsburgh	Mathematics of Finance 2
Sept 2019-Dec 2019	University of Pittsburgh	Mathematics of Finance 1
Jan 2018-April 2018	University of Pittsburgh	Mathematics of Finance 4
Sept 2017-Dec 2017	University of Pittsburgh	Mathematics of Finance 3
Jan 2017-April 2017	University of Pittsburgh	Mathematics of Finance 2
Sept 2016-Dec 2016	University of Pittsburgh	Mathematics of Finance 1
Jan 2016-April 2016	University of Pittsburgh	Mathematics of Finance 2
Sept 2015-Dec 2015	University of Pittsburgh	Mathematics of Finance 1
Jan 2015-April 2015	University of Pittsburgh	Mathematics of Finance 2
Sept 2014-Dec 2014	University of Pittsburgh	Mathematics of Finance 1
Sept 2012-Dec 2012	University of Pittsburgh	Jump processes and applications

2. **Undergraduate Courses**

Sept 2019-Dec 2019	University of Pittsburgh	Applied Probability for Actuaries
Jan 2019-April 2019	University of Pittsburgh	Analytic Geometry & Calculus 3
Jan 2019-April 2019	University of Pittsburgh	Analytic Geometry & Calculus 2
Sept 2018-Dec 2018	University of Pittsburgh	Applied Probability for Actuaries
Sept 2018-Dec 2018	University of Pittsburgh	Differential Equations
Sept 2017-Dec 2017	University of Pittsburgh	Analytic Geometry & Calculus 3
Sept 2016-Dec 2016	University of Pittsburgh	Actuarial Mathematics 1
Sept 2015-Dec 2015	University of Pittsburgh	Actuarial Mathematics 1
Sept 2014-Dec 2014	University of Pittsburgh	Actuarial Mathematics 1
Jan 2014-April 2014	University of Pittsburgh	Differential Equations
Sept 2013-Dec 2013	University of Pittsburgh	Linear Algebra
Sept 2013-Dec 2013	University of Pittsburgh	Analytic Geometry & Calculus 3
Jan 2013-April 2013	University of Pittsburgh	Linear Algebra
Sept 2012-Dec 2012	University of Pittsburgh	Linear Algebra
Jan 2012-April 2012	University of Pittsburgh	Actuarial Mathematics 2
Sept 2011-Dec 2011	University of Pittsburgh	Analytic Geometry & Calculus 1
Jan 2011-April 2011	University of Michigan	Stochastic Processes (2 Sections)
Sept 2010-Dec 2010	University of Michigan	Stochastic Processes
Sept 2010-Dec 2010	University of Michigan	Mathematics of Finance
Jan 2010-April 2010	University of Michigan	Introduction to Probability Theory
Jan 2010-April 2010	University of Michigan	Mathematics of Finance
Sept 2009-Dec 2009	University of Michigan	Mathematics of Finance (2 Sections)
Jan 2009-May 2009	University of Michigan	Compounded Interest and Life Insurance
Jan 2009-May 2009	University of Michigan	Mathematics of Finance
Sept 2008-Dec 2008	University of Michigan	Mathematics of Finance (2 Sections)

SERVICES

Referee for Annals of Probability, Annals of Applied Probability, Annales de l'Institut Henri Poincaré, SIAM Journal on Financial Mathematics, SIAM Journal on Control and Optimization, Stochastic Processes and their Applications, Mathematics of Operations Research, Mathematical Control and Related Fields, Statistics and Probability Letters, Applied Numerical Mathematics, Applied Stochastic Models in Business and Industry, Archiv der Mathematik, Mathematical Finance.

.