

Bo Yang

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PARTICULARS

EDUCATION

Tepper School of Business, Carnegie Mellon University Ph.D. in Operations Management	Pittsburgh, PA <i>2015 - Present</i>
Tepper School of Business, Carnegie Mellon University M.Sc. in Operations Management	Pittsburgh, PA <i>May 2017</i>
Antai College of Economics & Management, Shanghai Jiao Tong University M.Sc. in Management Science and Engineering	Shanghai, China <i>April 2015</i>
University of Shanghai for Science and Technology B.Sc. in Industrial Engineering	Shanghai, China <i>May 2011</i>

RESEARCH INTERESTS

- Modeling and solving intractable Markov decision processes with reinforcement learning approaches, in particular in the context of (renewable) energy operations
- Solving large scale convex optimization problems with advanced mathematical programming
- Applying Non-Gaussian price models and financial hedging in energy trading operations.

DISSERTATION

Title: “Pathwise Optimization for Merchant Energy Production”
Advisor: Prof. Nicola Secomandi, Prof. Selvaprabu Nadarajah

My thesis centers on using reinforcement learning approaches to compute lower and upper bounds of intractable MDPs arising in the energy operations. Specifically, my work extends a state-of-the-art approach, i.e., pathwise optimization, from optimal stopping to MDPs with informationally rich structures, e.g. natural gas storage and ethanol production.

ACADEMIC HONORS

- PNC Presidential Fellowship, Carnegie Mellon University, 2020.
- William Larimer Mellon fellowship, Carnegie Mellon University, 2015.
- 2nd Prize Award, Shanghai “Management Science” Graduate Academic Seminar, 2014.
- China National Scholarship, 2014.
- 1st Prize Scholarship, SJTU, 2012,2013
- 1st Prize Scholarship, USST, for four consecutive years, 2007-2011.

RESEARCH

SUBMITTED PAPERS

1. Bo Yang, Selvaprabu Nadarajah, Nicola Secomandi, “Least Squares Monte Carlo and Pathwise Optimization for Merchant Energy Production”, Under the 2nd round review at *Operations Research*.

WORKING PAPERS

2. “Quadratic Hedging of Futures Term Structure Risk in Merchant Energy Trading Operations”, with Nicola Secomandi. Draft Available. In preparation for *Operations Research*
3. “Pathwise Optimization based Reinforcement Learning Approach for Merchant Energy Operations”, with Selvaprabu Nadarajah, Nicola Secomandi. Draft Available. In preparation for *Operations Research*.
4. “A Study of Non-Gaussian Processes for Merchant Energy Production”, with Anna Gambaro and Nicola Secomandi. Draft Available.

WORKING IN PROGRESS

5. “A Constraint Aggregation and Disaggregation Method to Continuous Endogenous State Merchant Energy Operations”, with Selvaprabu Nadarajah and Nicola Secomandi.
6. “Data driven distributionally-robust optimization for merchant energy operations models”, with Nicola Secomandi, under the support of Seed Grant for Energy Research, Scott Institute for Energy Innovation.
7. “Tutorial Paper: Implementing the Levy Model in the Context of Energy Trading Operations”, with Nicola Secomandi
8. “Improving the dual bound generated by the least squares Monte Carlo method”, with Selvaprabu Nadarajah and Nicola Secomandi
9. “Zeroth Order Method for Pathwise Optimization based Reinforcement Learning”, with Selvaprabu Nadarajah and Nicola Secomandi

TEACHING EXPERIENCE

- **Independent Instructor.** Operations Management (70371), Undergraduates, Summer 2019, Tepper School of Business, Carnegie Mellon University. Teaching Evaluation: 5.0/5.0
- **Teaching Assistant.** Real Options (45964), MBAs, Prof. Nicola Secomandi, 2019-2021, Tepper School of Business, Carnegie Mellon University
- **Teaching Assistant.** Real Options (70477), Undergraduates, Prof. Nicola Secomandi, 2019-2021, Tepper School of Business, Carnegie Mellon University
- **Teaching Assistant.** Dynamic Programming (47840), Ph.D., Prof. Nicola Secomandi, 2018, 2020, Tepper School of Business, Carnegie Mellon University
- **Teaching Assistant.** Risk Analytics (45863), MBAs, Prof. Nicola Secomandi, 2020, Tepper School of Business, Carnegie Mellon University
- **Teaching Assistant.** Operations and Supply Chain Analytics (46893), Undergraduates, Prof. Joseph Xu, 2018, Tepper School of Business, Carnegie Mellon University
- **Teaching Assistant.** Optimization, Graduates, Prof. Ruimin Wu, 2014, Antai College of Economics & Management, Shanghai Jiao Tong University

TALKS

CONFERENCE TALKS

- Pathwise Optimization for Merchant Energy Production
 - INFORMS Annual Meeting, Phoenix, Arizona, Nov. 2018
 - POMS Annual Meeting, Washington D.C., May 2019
 - CEMA, Pittsburgh, Pennsylvania, Jun. 2019
- Pathwise Optimization Based Reinforcement Learning for Informationally Rich Models
 - INFORMS Annual Meeting, Seattle, Washington, Nov. 2019
 - POMS Annual Meeting, Minneapolis, Minnesota, Apr. 2020
 - INFORMS Annual Meeting, Virtual, Nov. 2020
- Least Squares Monte Carlo and Pathwise Optimization for Merchant Energy Production
 - Kellogg-Wharton OM Workshop, Jul. 2020
 - Energy Finance, Italy, Feb. 2021
 - MSOM SIG Conference, Jun. 2021
 - CEMA, Madrid, Spain, Jun. 2021

PROFESSIONAL PRACTICE

- **Research Assistant, Bao Steel Group Corporation, China**, Feb.-Apr. 2014. Research on International e-business Service Management in Bao Steel-SJTU Cooperation Project.
- *Implemented statistical analysis and proposed recommendations on service quality control and risk management system of the e-business platform.*
- **Developer, Shanghai Road& Bridge (Group) Co. Ltd, China**, Jan.-Jun. 2011. Development of Inventory Management Information System.
- *Contributed to the discussion on the framework of the information system.*
- *Completed the coding work in C# and SQL for a subsystem development.*

SERVICE

Reviewer: *Operations Research, INFORMS Journal on Computing*

MISCELLANEOUS

- Programming language: C/C++, C#, R, SQL
- Optimization Solver: Gurobi, CPLEX
- Software: Excel, Matlab, Arena, SAS
- Language: Mandarin, English

REFERENCES

Prof. Nicola Secomandi
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