Min-hwan Oh

Contact Information

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Education

Columbia University, New York, NY, USA **2015–Present**

Ph.D., Operations Research

Ph.D. Specialization in Data Science

Thesis Advisor: Prof. Garud Iyengar

Columbia University, New York, NY, USA **2015**

B.A., Mathematics–Statistics

Summa cum laude

Departmental Honors in Statistics

Phi Beta Kappa

Research Interests

Sequential decision making under uncertainty, Contextual bandits, Reinforcement learning, Revenue management

Submitted Papers

13. M. Oh, G. Iyengar. *Thompson Sampling for Multinomial Logit Contextual Bandits*. Submitted.
12. M. Oh, G. Iyengar. *Multinomial Logit Contextual Bandits*. Submitted.
11. M. Oh, P. Olsen, K.N. Ramamurthy, *Crowd Counting with Decomposed Uncertainty*. Submitted.
10. M. Oh, P. Olsen, K.N. Ramamurthy, *Counting and Segmenting Sorghum Heads*. Submitted.

Refereed Publications

9. M. Oh, G. Iyengar. *Sequential Anomaly Detection using Inverse Reinforcement Learning*. Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD). ACM, 2019.
Oral presentation in research paper track (top 9% of total submissions)
8. S. Keshri, M. Oh, S. Zhang, G. Iyengar. *Automatic event detection in basketball using HMM with energy based defensive assignment*. To appear in Journal in Quantitative Analysis of Sports. 2019
Preliminary version accepted for oral presentation, NESSIS 2017
7. H. Kanezashi, T. Suzumura, D. Garcia-Gasulla, M. Oh, S. Matsuoka, *Adaptive Pattern Matching with Reinforcement Learning for Dynamic Graphs*. IEEE International Conference on High Performance Computing (HiPC), 2018.
Best Paper Award winner
6. M. Oh, G. Iyengar. *Directed Exploration in PAC Model-free Reinforcement Learning*, Exploration in Reinforcement Learning workshop, International Conference on Machine Learning (ICML), 2018.
2nd place winner, 2018 INFORMS Annual Meeting Poster Competition
5. W. Liu, P.Y. Chen, H. Cooper, M. Oh, S. Yeung, and T. Suzumura, *"Can GAN Learn Topological Features of a Graph?"* Workshop on Implicit Generative Models, International Conference on Machine Learning (ICML), 2017.

4. D. Soudry, S. Keshri, P. Stinson, M. Oh, G. Iyengar, L. Paninski. *Efficient "Shotgun" Inference of Neural Connectivity from Highly Sub-sampled Activity Data.* PLoS Computational Biology, 11 (10), 2015.
Preliminary version accepted at Cosyne 2015
3. M. Oh, S. Keshri, G. Iyengar. *Graphical Model for Basketball Match Simulation.* MIT Sloan Sports Analytics Conference, 2015.
Finalist in Research Paper Competition (top 2% of total submissions)

Working Papers

2. M. Oh, G. Iyengar. *Thompson Sampling for Contextual Combinatorial Cascading Bandits.*
1. U. Sümbül, J. Wohlwend, M. Oh, D. Roossien Jr., F. Chen, N, Barry, A. Marblestone, J. Cunningham, D. Cai, E. Boyden, L. Paninski. *Unsupervised segmentation of neuroanatomy from multispectral images.*

Honors and Awards

CKGSB Doctoral Fellowship, Columbia University **2018–Present**

KDD Student Travel Award, KDD **2019**

KSEA-KUSCO Graduate Scholarship, KSEA **2019**

W. Edwards Deming Doctoral Fellowship, Columbia University **2018–2019**

Best Paper Award, IEEE International Conference on HiPC **2018**

2nd Place Winner, INFORMS Annual Meeting Poster Competition **2018**

Statistics Departmental Honors, Columbia University **2015**

Travel Grant, Statistical & Applied Mathematical Sciences Institute **2014**

John Northcott Scholarship, Columbia University **2012–2015**

Dean's List, Columbia University **2011–2015**

Dean's Scholarship, Columbia University **2011**

Industry Experience

IBM T. J. Watson Research Center, Yorktown Heights, NY, USA

Spent two summers at the Center for Computational and Statistical Learning in IBM Research (Host: Dr. Naoki Abe)

Summer Research Intern **May–August 2018**

Summer Research Intern **May–August 2017**

Invited Talks

14. INFORMS Annual Meeting (upcoming) October 2019
13. KDD 2019 (upcoming) August 2019
12. MSOM Conference July 2019
11. RM&P Conference June 2019
10. POMS Annual Conference May 2019

9. Deming Center Doctoral Fellowship Seminar April 2019
8. IBM Thomas J. Watson Research Center August 2018
7. Data Science Society Seminar, Columbia University April 2018
6. NESSIS Oral Presentation. Harvard University September 2017
5. IBM Thomas J. Watson Research Center June 2017
4. Data Visualization Workshop. Columbia University September 2016
3. Sports Analytic Seminar. Columbia University March 2016
2. Columbia EPIC Graduate Student Research Seminar February 2016
1. MIT Sloan Sports Analytics Conference, Oral Presentation February 2015

Teaching Experience

Guest Lecturer, Columbia University

IEOR 4106, Stochastic Models **Spring 2016**

SPRT 5350, Fundamentals of Sports Analytics **Spring 2016**

Teaching Assistant, Columbia University
Department of Industrial Engineering and Operations Research

IEOR 4720, Deep Learning **Fall 2018**

IEOR 4650, Business Analytics **Spring 2017, Spring 2018**

IEOR 4007, Optimization for Financial Engineering **Fall 2017**

IEOR 4404, Simulation **Fall 2016**

IEOR 3106/4106, Stochastic Models **Fall 2015, Spring 2016**

Teaching Assistant (undergraduate), Columbia University
Department of Mathematics

MATH 4106, Modern Analysis I **Fall 2014**

MATH 2010, Linear Algebra **Spring 2014**

MATH 1202, Calculus IV **Fall 2013**

MATH 1201, Calculus III **Spring 2013**

Teaching Assistant (undergraduate), Columbia Business School

Doctoral Machine Learning Workshop **Summer 2014**

Computer Skills

Languages—Python, R, Matlab, Scala, C++, Java, HTML, CSS.

Deep learning tools—Tensorflow, PyTorch, Theano, Keras.

Cloud computing—Apache Spark, Hadoop.