Chang-Han Rhee

CONTACT

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RESEARCH INTERESTS

Applied Probability, Simulation and Statistical Inference for Stochastic Processes, Rare-Event Analysis, Sensitivity Analysis, Energy Systems, Experimental Design.

ACADEMIC POSITIONS

Northwestern University, Evanston, IL, USA — 2018–Present
Industrial Engineering and Management Sciences
Assistant Professor

Centrum Wiskunde & Informatica, Amsterdam, Netherlands — 2015–2018
Stochastics Group
Postdoctoral Researcher

Georgia Institute of Technology, Atlanta, GA, USA — 2013–2015
Industrial & Systems Engineering and Biomedical Engineering
Postdoctoral Fellow

EDUCATION

Stanford University, Stanford, CA, USA — 2013
Ph.D. in Computational and Mathematical Engineering

Stanford University, Stanford, CA, USA — 2008
M.S. in Computational and Mathematical Engineering [1]

Seoul National University, Seoul, Korea — 2006
B.S. in Mathematics and B.S. in Computer Science

AWARDS

- **INFORMS Simulation Society Outstanding Simulation Publication Award, 2016**
- Finalist, George Nicholson Student Paper Competition, 2013
- Best Student Paper Award (MS/OR focused), Winter Simulation Conference, 2012
- Samsung Fellowship, 2008–2012
- Seoul National University Merit Scholarship, 2005–2006
- ACM SIGSIM Travel Award, 2012
- NSF Financial Support for WSC 2012

PUBLICATIONS

[1] "Sample-path large deviations for Lèvy processes and random walks with Weibull increments," with M. Bazhba, J. Blanchet, and B. Zwart. `arXiv:1710.04013`. Submitted to *Annals of Applied Probability*.

[2] "Sample-path large deviations for Lévy processes and random walks with regularly varying increments," with J. Blanchet and B. Zwart. `arXiv:1606.02795`. *Annals of Probability*. forthcoming.

[3] "Efficient rare-event simulation for multiple jump events in regularly varying random walks and compound Poisson processes," with B. Chen, J. Blanchet, and B. Zwart. `arXiv:1706.03981`. *Mathematics of Operations Research*. forthcoming

[1] Officially granted in 2013

[4] "Importance sampling of heavy-tailed iterated random functions," with B. Chen and B. Zwart. `arXiv:1609.03182`. *Advances in Applied Probability.* forthcoming

[5] "Queue length asymptotics for the multiple server queue with heavy-tailed Weibull service times," with M. Bazhba, J. Blanchet, and B. Zwart. Submitted to *Queueing Systems.*

[6] "Lyapunov conditions for differentiability of Markov chain expectations: the absolutely continuous case," with P. W. Glynn. `arXiv:1707.03870`.

[7] "Space filling design for non-linear models," with E. Zhou and P. Qiu. `arXiv:1710.11616`. Submitted to *Stochastic Systems.*

[8] "Unbiased estimation with square root convergence for SDE models," with P. W. Glynn. *Operations Research*, 63(5): 1026–1043, 2015. **2016 INFORMS Simulation Society Outstanding Simulation Publication Award.** The preprint of this paper was also recognized as a **Finalist in 2013 George Nicholson Student Paper Competition.**

[9] "Exact estimation for Markov chain equilibrium expectations," with P. W. Glynn. *Journal of Applied Probability (Special Jubilee Issue)*, 51A: 377-389, 2014.

[10] "An iterative algorithm for sampling from manifolds," with E. Zhou and P. Qiu, *Proceedings of the 2014 Winter Simulation Conference*, 2014.

[11] "A new approach to unbiased estimation for SDEs," with P. W. Glynn, *Proceedings of the 2012 Winter Simulation Conference*, 2012. **Best MS/OR focused Student Paper.**

Working Papers

[12] "Sample-path large deviations for Markov random walks with unbounded functionals," with M. Bazhba, J. Blanchet, B. Zwart

[13] "Sample-path large deviations for regularly varying Markov additive processes" with B. Chen and B. Zwart

[14] "On heavy-tailed simulation estimators," with B. Chen.

[15] "Rare-event simulation for electric power distribution networks with high variability," with N. Vasmel, and B. Zwart

[16] "Quasi-variational problems in heavy-tailed large deviations theory," with B. Zwart and J. Blanchet

[17] "Lyapunov conditions for differentiability of Markov chain expectations: the contracting case," with P. W. Glynn.

Services

Program Committee:
- 2019 Applied Probability Society Conference
- 2019 Monte Carlo Methods
- 2017, 2018 International Conference on Machine Learning (Reviewer)
- 2016, 2018 Winter Simulation Conference (Analysis and Methodology Track)

Referee:
Annals of Applied Probability, Operations Research, Mathematics of Operations Research, Management Science, Stochastic Systems, Bernoulli, Advances in Applied Probability, INFORMS Journal on Computing, IIE Transactions, Journal of Simulation, Proceedings of the Winter Simulation Conference, Proceedings of the 2016 MCQMC

Talks

Sample path LDP for heavy-tailed processes

- ISysE department, KAIST, August 2018
- Stochastic Seminar, Eindhoven University of Technology, May 2018
- IEOR department, University of California at Berkeley, March 2018
- ORIE, University of Texas at Austin, February 2018
- ISEM department, National University of Singapore, February 2018
- IEMS department, Northwestern Univeristy, February 2018
- Mark Kac Lecture, Utrecht, November 2017
- Applied Probability Society Conference, Evanston, July 2017
- Extreme Value Analysis Conference, Delft, June 2017
- INFORMS Annual Meeting, Nashville, November 2016
- IBM Watson, September 2016
- Lévy 2016 Summer School, July 2016

Efficient rare-event simulation for multiple jump events heavy-tailed processes

- RESIM 2018, Stockholm, August 2018
- MCQMC 2018, Rennes, July 2018
- INFORMS Annual Meeting, Houston, October 2017

Perfect estimation with imperfect samplers

- ORIE department, Cornell University, April 2017
- Operations Research Seminar, Tinbergen Institute, December 2016
- Computational Statistics Seminar, Oxford University, November 2016
- Retrospective Monte Carlo Workshop, University of Warwick, July 2016
- Applied Mathematics Department, Ecole Polytechnique, Paris, June 2016
- IMS-ISBA Joint Meeting MCMSki 2016, Lenzerheide, January 2016
- Scientific Meeting, Centrum Wiskunde & Informatica, November 2015
- OR department, Naval Postgraduate School, August 2015
- IE department, Seoul National University, December 2014
- IME department, Pohang University of Science and Technology, December 2014
- SME department, Sungkyunkwan University, December 2014
- Applied Probability Seminar, Georgia Tech, September 2014
- ISE department, Virginia Tech, March 2014
- ISysE department, Korean Advanced Institute of Sceince and Technology, December 2013
- INFORMS Annual Meeting, Minneapolis, October 2013
- ICME Colloquium, Stanford University, February 2013
- Winter Simulation Conference, Berlin, December 2012

Sensitivity analysis for Markov chains

- Queueing Colloquium, Centrum Wiskunde & Informatica, May 2016
- INFORMS Annual Meeting, San Francisco, November 2014

- SIAM Seminars on Current Research in Engineering & Applied Mathematics, Stanford, March 2012

Space filling design for nonlinear models

- Winter Simulation Conference, Savannah, December 2014
- INFORMS 2018, Phoenix 2018

Unbiased MLMC for rare event simulation of stochastic recursions

- MCQMC 2016, Stanford University, August 2016

Perfect estimation and response-surface-filling design

- ISysE department, Korean Advanced Institute of Sceince and Technology, March 2015
- IME department, Pohang University of Science and Technology, February 2015
- ISE department, University of Illinois at Urbana-Champaign, February 2015

Teaching Experience

Stanford University, Stanford, CA, USA

Instructor Summer 2011

Taught math refresher course for the incoming students at Stanford Engineering School.
Duties: Developing course contents and giving lectures.

- CME 001: Math Refresher Course, Probability and Statistics Session

Teaching Assistant Autumn 2012, Spring 2012

Duties: Holding office hours, writing problem sets, final exams and their solutions, grading, and giving supplementary lectures and review sessions

- CME 100: Vector Calculus
- MS&E 322: Stochastic Calculus and Control

Course Assistant Winter 2007

Duties: Holding office hours, helping writing exams, and grading.

- MS&E 121: Introduction to Stochastic Modeling