

# Chang-Han Rhee

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CONTACT	Centrum Wiskunde & Informatica Science Park 123, M342 Amsterdam, 1098 XG, Netherlands	+31.(0)20.592.4150 rhee@cwi.nl <a href="http://chrhee.github.io">http://chrhee.github.io</a>
RESEARCH INTERESTS	Applied Probability, Simulation and Statistical Inference for Stochastic Processes, Rare-Event Analysis, Energy Systems, Experimental Design.	
ACADEMIC POSITIONS	<b>Centrum Wiskunde &amp; Informatica</b> , Amsterdam, Netherlands <i>Postdoctoral Researcher in Stochastics</i> Supervisor: Bert Zwart	2015–Present
	<b>Georgia Institute of Technology</b> , Atlanta, GA, USA <i>Postdoctoral Fellow in Industrial &amp; Systems Engineering and Biomedical Engineering</i> Supervisor: Enlu Zhou, Peng Qiu	2013–2015
EDUCATION	<b>Stanford University</b> , Stanford, CA, USA <i>Ph.D. in Computational and Mathematical Engineering</i> Supervisor: Peter W. Glynn Thesis title: <i>Unbiased Estimation with Biased Samplers</i>	2008–2013
	<b>Stanford University</b> , Stanford, CA, USA <i>M.S. in Computational and Mathematical Engineering</i> <sup>1</sup>	2006–2008
	<b>Seoul National University</b> , Seoul, Korea <i>B.S. in Mathematics and B.S. in Computer Science</i>	1998–2006 (Military service: 2002–2005)
AWARDS	<ul style="list-style-type: none"><li>• <b>INFORMS Simulation Society Outstanding Simulation Publication Award, 2016</b></li><li>• Finalist, George Nicholson Student Paper Competition, 2013</li><li>• Best Student Paper Award (MS/OR focused), Winter Simulation Conference, 2012</li><li>• Samsung Fellowship, 2008–2012</li><li>• Seoul National University Merit Scholarship, 2005–2006</li><li>• ACM SIGSIM Travel Award, 2012</li><li>• NSF Financial Support for WSC 2012</li></ul>	
PUBLICATIONS	<p>[1] “Sample-path large deviation principle for Lévy processes with Weibull increments and many server queue,” with M. Bazzha, J. Blanchet, and B. Zwart. <a href="https://arxiv.org/abs/1710.04013">arXiv:1710.04013</a>. Submitted for Publication.</p> <p>[2] “Sample-path large deviations for heavy-tailed Lévy processes and random walks,” with J. Blanchet and B. Zwart. <a href="https://arxiv.org/abs/1606.02795">arXiv:1606.02795</a>. Submitted to <i>Annals of Probability</i>. (under revision for second round review.)</p> <p>[3] “A general importance Sampling strategy for heavy-tailed random walks,” with B. Chen, J. Blanchet, and B. Zwart. <a href="https://arxiv.org/abs/1706.03981">arXiv:1706.03981</a>. Submitted to <i>Mathematics of Operations Research</i>. (under revision for second round review.)</p> <p>[4] “Importance sampling of heavy-tailed stochastic perpetuities” with B. Chen and B. Zwart. <a href="https://arxiv.org/abs/1609.03182">arXiv:1609.03182</a>. Submitted to <i>Advances in Applied Probability</i>. (under revision for second round review.)</p>	

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<sup>1</sup>Officially granted in 2013

- [5] “Lyapunov conditions for differentiability of Markov chain expectations: the absolutely continuous case,” with P. W. Glynn. [arXiv:1707.03870](https://arxiv.org/abs/1707.03870). To be submitted to *Mathematics of Operations Research*.
- [6] “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**.
- [7] “Exact estimation for Markov chain equilibrium expectations,” with P. W. Glynn. *Journal of Applied Probability (Special Jubilee Issue)*, 51A: 377-389, 2014.
- [8] “An iterative algorithm for sampling from manifolds,” with E. Zhou and P. Qiu, *Proceedings of the 2014 Winter Simulation Conference*, 2014.
- [9] “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

- [10] “Space filling design for non-linear models,” with E. Zhou and P. Qiu. To be submitted for publication soon.
- [11] “On heavy-tailed simulation estimators,” with B. Chen.
- [12] “Rare event simulation for cascading failures in power grids,” with T. Nesti, N. Vasmel, and B. Zwart
- [13] “Sample-path large deviations for heavy-tailed Markov additive processes” with B. Chen and B. Zwart
- [14] “Quasi-variational problems in heavy-tailed large deviations theory,” with B. Zwart and J. Blanchet
- [15] “Lyapunov conditions for differentiability of Markov chain expectations: the contracting case,” with P. W. Glynn.

SERVICES

*Program Committee:*

- 2016 Winter Simulation Conference (Analysis and Methodology Track)
- 2017 International Conference on Machine Learning (Reviewer)

*Referee:*

- Operations Research, Mathematics of Operations Research, Bernoulli, Advances in Applied Probability, IIE Transactions, Journal of Simulation, Proceedings of the Winter Simulation Conference, Proceedings of the 2016 MCQMC

TALKS

*Sample path LDP for heavy-tailed processes*

- Mark Kac Lecture, Utrecht, November 2017 (scheduled)
- 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

*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 Science 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

*An iterative algorithm for sampling from manifolds*

- Winter Simulation Conference, Savannah, December 2014

*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 Science 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

PROFESSIONAL  
EXPERIENCE

**Gamevil Inc.**, Seoul, Korea

2003–2005

*Software Engineer (Alternative military service)*

- Worked on: Developing software libraries for mobile games. Developing mobile games. Administering online game server and user database.

**Wisefree Inc.**, Seoul, Korea

2002–2003

*Software Engineer (Alternative military service)*

- Worked on: Developing intranet system for LG Siltron and Korean national police.