SUJIN KIM

University of Maryland
Van Munching Hall, 4466
College Park, MD 20742
Email: kimsj22@umd.edu

Education

Ph.D. in Operations Research and Information Engineering, Cornell University, Ithaca NY, 2006.
M.S. in Mathematics, University of Washington, Seattle WA, 2001.

Experience

- Clinical Associate Professor (August, 2018 – Current)
  Decision, Operations & Information Technologies, University of Maryland, College Park MD
- Visiting Professor (August, 2016 – May, 2018)
  Decision, Operations & Information Technologies, University of Maryland, College Park MD
- Assistant Professor (June, 2008-December, 2014, maternity leave in academic year 2012/2013)
  Industrial Systems Engineering & Management, National University of Singapore, Singapore
- Visiting Professor (August, 2006-May, 2008)
  Industrial Engineering, Purdue University, West Lafayette IN

Research Interests

- Simulation optimization for stochastic systems: modeling, theory and algorithms
- Energy applications: natural gas supply planning and portfolio management for power generation companies

Teaching

Decision, Operations & Information Technologies, University of Maryland, College Park MD
- BUDT 758K: Computer Simulation for Business Applications (Fall 2016, Spring 2017, Spring 2018)
  Graduate-level course on simulation; covers simulation modeling of complex systems, Arena simulation software, input/output data analysis.

Industrial Systems Engineering & Management, National University of Singapore, Singapore
- IE 6099: ISE Research Methodology (Fall 2009, Fall 2010)
  Doctoral seminar course on advanced research topics; covers simulation analysis and advanced optimization methodologies, with student involvement.
- IE 6005: Stochastic Models and Optimization (Spring 2010, Spring 2011)
  Doctoral course on stochastic optimization; covers topics in stochastic search, sample average approximation, stochastic programming, and some non-linear optimization.
- IE 6004: Advanced Engineering Probability (Fall 2008, Fall 2009, Fall 2010, Fall 2011, Fall 2013, Fall 2014)
  Doctoral course on probability and stochastic processes; covers Markov chains, Poisson processes, and martingales.
- IE 5401: Industrial Logistics (Spring 2012, Spring 2014)
  Graduate-level course on industrial logistics; covers components of logistic systems, logistic policy, transportation systems, vehicle routing and scheduling.
- IE 5004: Engineering Probability and Simulation (Fall 2009, Fall 2011)
  Graduate-level course on probability and stochastic processes; covers elementary probability and limit theorems, with an introduction to Markov chains and simulation.

Industrial Engineering, Purdue University, West Lafayette IN
- IE 590S: Stochastic Decision Models and Optimization (Fall 2007)

Graduate-level course on stochastic optimization; covers stochastic programming, queuing theory, Markov decision processes, and applications.

- IE 581: Simulation Design and Analysis (Spring 2007, Spring 2008)
  Graduate-level course on simulation; covers input and output analysis, random number generation, and variance reduction techniques.
- IE 536: Operations Research – Stochastic Processes (Spring 2007, Spring 2008)
  Graduate-level course on probability and stochastic processes; covers Markov chains, Poisson processes, and martingales, with an introduction to queuing theory.
- IE 336: Operations Research – Stochastic Models (Fall 2006, Spring 2007)
  Undergraduate course on probability and stochastic processes; covers Markov chains, Poisson processes, and queuing theory.
- IE 230: Engineering Probability and Statistics (Fall 2007)
  Undergraduate introductory statistics course; covers elementary probability, limit theorems, hypothesis testing, and point estimation.

Operations Research and Information Engineering, Cornell University, Ithaca NY
- OR&IE 361/523: Engineering Stochastic Processes (Summer 2005)
  Joint undergraduate/graduate course on probability and stochastic processes; covers Markov chains, Poisson processes, and martingales.

Book Chapters and Theses

- Kim, S., Pasupathy, R. & Henderson, S.G. (2015) "A guide to sample average approximation." in Handbook on Simulation Optimization, Fred Hillier's OR series, Springer.
- Kim, S. (2006) "Adaptive control variates in Monte Carlo simulation." Ph.D. thesis, Cornell University, Ithaca NY.

Journal Papers - Published

- Ryu, J.-H. & Kim, S. (2014) "A derivative-free trust region method for biobjective optimization." *SIAM Journal on Optimization* **24**(1), 334–362.
- Jirutitijaroen, P., Kim, S., Kitteethreerapronchai, O. & Prina, J.P. (2013) "Optimizing natural gas supply and energy portfolios of a generation company." *Applied Energy* **107**(C), 1-9.
- Pasupathy, R. & Kim, S. (2011) "The stochastic root-finding problem: overview, solutions, and open questions." *ACM Transactions on Modeling and Computer Simulation* **21**(3), Article 19.
- Zhang, D. & Kim, S. (2011) "A two stage stochastic supply function equilibrium model for electricity markets with forward contracts." *Pacific Journal of Optimization*. Special Issue on Stochastic Programming and Its Applications **7**(2), 297-315.
- Ryu, J.-H., Wan, H. & Kim, S. (2010) "Optimal design of a CUSUM chart for a mean shift of unknown size." *Journal of Quality Technology* **42**(3), 311-326.
- Kim, S. & Henderson, S.G. (2007) "Adaptive control variates for finite-horizon simulation." *Mathematics of Operations Research* **32**(3), 508-527.

Conference Proceedings

- Ji, Y. & Kim S. (2014), "Regularized Radial Basis Function Models For Stochastic Simulation." Proceedings of the 2014 Winter Simulation Conference (eds: A. Tolk, S. Y. Diallo, I. O. Ryzhov, L. Yilmaz, S. Buckley, and J. A. Miller)
- Weng, R & Kim S. (2014), "Pricing Bilateral Gas Contract for a GENCO". Proceedings of the 2014 Industrial and Systems Engineering Research Conference, ed. Y. Guan and H. Liao (2014). Norcross: IIE.
- Ji, Y. & Kim S. (2013), "An adaptive radial basis function method using weighted improvement." Proceedings of the 2013 Winter Simulation Conference (eds: R. Pasupathy, S.-H. Kim, A. Tolk, R. Hill, and M. E. Kuhl), pp. 952-969.

- Kim, S. & Ryu, J.-H. (2011) "A sample average approximation method for multi-objective stochastic optimization." Proceedings of the 2011 Winter Simulation Conference (eds: S. Jain, R.R. Creasey, J. Himmelspach, K.P. White, M. Fu), pp. 4026-4037.
- Kim, S. & Ryu, J.-H. (2011) "A trust region algorithm for bi-objective stochastic optimization." Proceedings of the 2011 International Conference on Computational Science, pp. 1422-1430.
- Kim, S. & Zhang, D. (2010) "Convergence properties of direct search methods for stochastic optimization." Proceedings of the 2010 Winter Simulation Conference (eds: B. Johansson, S. Jain, J. Montoya-Torres, J. Hugan, E. Yücesan), pp. 1003-1011.
- Kitteethreerapronchai, O., Jirutitijaroen, P., Kim, S. & Prina, J.P. (2010) "Optimizing natural gas supply and energy portfolios of a generation company." Proceedings of the 2010 IEEE International Conference on Probabilistic Methods Applied to Power Systems, pp. 231-237.
- Zhang, D. & Kim, S. (2010) "A two stage stochastic equilibrium model for energy markets with forward contracts." Proceedings of the 2010 IEEE International Conference on Probabilistic Methods Applied to Power Systems, pp. 194-199.
- Ryu, J.-H., Kim, S. & Wan, H. (2009) "Pareto front approximation with adaptive weighted sum method in multiobjective simulation optimization." Proceedings of the 2009 Winter Simulation Conference (eds: M.D. Rossetti, R.R. Hill, B. Johansson, A. Dunkin, R.G. Ingalls), pp. 623-633.
- Kim, S. & Henderson, S.G. (2008) "The mathematics of continuous-variable simulation optimization." Proceedings of the 2008 Winter Simulation Conference (eds: S.J. Mason, R.R. Hill, S.J. Mönch, O. Rose, T. Jefferson, J.W. Fowler), pp. 122-132.
- Kim, S. & Henderson, S.G. (2007) "Non-linear control variates for regenerative steady-state simulation." Proceedings of the 2007 Winter Simulation Conference (eds: S.G. Henderson, B. Biller, M.-H. Hsieh, J. Shortle, J.D. Tew, R.R. Barton), pp. 430-438.
- Kim, S. (2006) "Gradient-based simulation optimization." Proceedings of the 2006 Winter Simulation Conference (eds: L.F. Perrone, F.P. Wieland, J. Liu, B.G. Lawson, D.M. Nicol, R.M. Fujimoto), pp. 159-167.
- Kim, S. & Henderson, S.G. (2004) "Adaptive control variates." Proceedings of the 2004 Winter Simulation Conference (eds: R.G. Ingalls, M.D. Rossetti, J.S. Smith, B.A. Peters), pp. 621-629.

Post-docs Supervised

Industrial and Systems Engineering, National University of Singapore, Singapore
- Jong-hyun Ryu, 2010-2012.
- Dali Zhang, 2009-2011.
- Oran Kitteethreerapronchai (jointly with P. Jirutitijaroen), 2009-2010.
- Jung-kyung Kim (jointly with H.-C. Hong), 2009-2010.

Ph.D. Students Advised (Industrial and Systems Engineering, National University of Singapore)
- Muchen Tang (jointly with A. Ng), graduated in 2015
- Rengrong Weng, graduated in 2015
- Yibo Ji, graduated in 2014
- Sicong Ma (jointly with L.C. Tang), graduated in 2014

Funding

- "Data Analytics and Simulations to Support Decision-Making in Emergency Medical Services (EMS) Systems." (Co-PI) Singapore Civil Defence Force, 2014-2016. Grant Amount: S$ 232, 000.
- "A new framework for adaptive global simulation optimization using local search." (PI) Academic Research Fund, Singapore Ministry of Education, 2013-2015. Grant amount: S$155,500.
- "Optimization with probabilistic uncertainty: simulation-based approach." (PI) Exxon Mobil Research & Engineering, 2011-2012. Grant amount: US$75,000.
- "Simulation-based optimization." (PI) Exxon Mobil Research & Engineering, 2010-2011. Grant amount: US$60,000.

- "Optimal design in the presence of uncertainty." (PI) Exxon Mobil Research & Engineering, 2009-2010. Grant amount: US$50,000.
- "Simulation optimization for stochastic systems." (PI) Academic Research Fund, Singapore Ministry of Education, 2008-2011. Grant amount: S$178,600.

Awards

- Finalist, INFORMS Junior Faculty Interest Group Paper Competition, 2012.
- Third place, POMS-HK Student Paper Competition (Ji Yibo), 2012.
- Nominated for best teaching award, IE 6005, National University of Singapore, Spring 2010.
- Nominated for best teaching award, IE 6004, National University of Singapore, Fall 2008, Fall 2009.