

Kyle Y. Lin

April 2025

kylin@nps.edu — +1-831-656-2648 — <https://faculty.nps.edu/kylin/>

Summary

Dr. Kyle Lin is Professor in the Operations Research Department at the Naval Postgraduate School. He specializes in mathematical modeling, applied probability, game theory, optimization, and their applications. His academic research focuses on developing novel mathematical models to glean new insights into a broad spectrum of defense-related operations, such as search, patrol, surveillance, and combat. On the practical side of his work, he formulates and implements algorithms to address emerging logistical, scheduling, and operational problems for various Department of Defense agencies.

Education

University of California, Berkeley CA

Ph.D. Industrial Engineering and Operations Research, 2000

Dissertation: Admission Control with Incomplete Information

Minors: Statistics and Finance

Advisor: Sheldon M. Ross

University of California, Berkeley CA

M.S. Industrial Engineering and Operations Research, 1997

National Taiwan University, Taipei Taiwan

B.S. Electrical Engineering, 1994

Professional Experience

7/2018–present	Professor, Operations Research Department, Naval Postgraduate School, Monterey CA
7/2007–6/2018	Associate Professor, Operations Research Department, Naval Postgraduate School, Monterey CA
9/2004–7/2007	Assistant Professor, Operations Research Department, Naval Postgraduate School, Monterey CA
1/2001–8/2004	Assistant Professor, Grado Department of Industrial and Systems Engineering, Virginia Tech, Blacksburg VA
7/2000–12/2000	Research Scientist, Corporate Marketing, KLA-Tencor Corporation, San Jose CA

Expertise and Research Interests

- Stochastic Modeling and Analysis
- Mathematical Programming and Optimization
- Game Theory and Its Applications
- Monte Carlo Simulation and Statistical Analysis
- Machine Learning and Artificial Intelligence
- Warfare Modeling and Analysis

Awards and Honors

- The Mills Medal, 2020, for work on Surface Ship Drydock Schedule Planner.
- Rear Admiral John Jay Schieffelin Award for Teaching Excellence Top 5%, 2019.
- Kuhn Award, 2017. The Kuhn Award is presented annually to an exceptional paper published in Naval Research Logistics during the previous three years as selected by a committee of the Associate Editors.
- Paul E. Torgersen Outstanding Teaching Award, 2004, Virginia Tech.
- Teaching Assistant of the Year Award, 1999, U.C. Berkeley.

Publications in Refereed Academic Journals

Author or Coauthor of 35+ articles published in academic journals, including Operations Research, INFORMS Journal on Computing, Mathematics of Operations Research, Theoretical Computer Science, Naval Research Logistics, and European Journal of Operational Research.

1. Ross, S.M. and Lin, K.Y. 1999. A pseudo counterexample to a simulation metatheorem. *Probability in the Engineering and Informational Sciences* 13(3) 329-332.
2. Ross, S.M. and Lin, K.Y. 2001. Applying variance reduction ideas in queueing simulations. *Probability in the Engineering and Informational Sciences* 15(4) 481-494.
3. Lin, K.Y. and Ross, S.M. 2003. Admission control with incomplete information of a queueing system. *Operations Research* 51(4) 645-654.
4. Lin, K.Y. 2003. Decentralized admission control of a queueing system: a game-theoretic model. *Naval Research Logistics* 50(7) 702-718.
5. Lin, K.Y. and Ross S.M. 2004. Optimal admission control for a single server loss queue. *Journal of Applied Probability* 41(2) 535-546.
6. Lin, K.Y. 2004. A sequential dynamic pricing model and its applications. *Naval Research Logistic* 51(4) 501-521.
7. Tseng, C., Lin, K.Y. and Sundararajan, S.K. 2005. Managing cost overrun risk in project funding allocation. *Annals of Operations Research* 135(1) 127-153.
8. Lin, K.Y. 2006. Dynamic pricing with real-time demand learning. *European Journal of Operational Research* 174(1) 522-538.
9. Tseng, C. and Lin, K.Y. 2007. A framework using two-factor price lattices for generation asset valuation. *Operations Research* 55(2) 234-251.
10. Bish, E.K., Lin, K.Y. and Hong, S. 2008. Allocation of flexible and indivisible resources with decision postponement and demand learning. *European Journal of Operational Research*

- 187(2) 429-441.
11. Szechtman, R., Kress, M., Lin, K.Y., and Cfir, D. 2008. Models of sensor operations for border surveillance. *Naval Research Logistics* 55(1) 27-41.
 12. Sibdari, S., Lin, K.Y., and Chellappan, S. 2008. Multiproduct revenue management: An empirical study of Auto Train at Amtrak. *Journal of Revenue and Pricing Management* 7(2) 172-184.
 13. Lennon C., McGowan J., and Lin, K.Y. 2008. A game-theoretic model for repeated assignment problem between two selfish agents. *Journal of the Operational Research Society* 59(12) 1652-1658.
 14. Kress, M., Lin, K.Y., and Szechtman, R. 2008. Optimal discrete search with imperfect specificity. *Mathematical Methods of Operations Research* 68 539-549.
 15. Lin, K.Y., Kress, M., and Szechtman, R. 2009. Scheduling policies for an antiterrorist surveillance system. *Naval Research Logistics* 56(2) 113-126.
 16. Lin, K.Y. and Sibdari, S. 2009. Dynamic price competition with discrete customer choices. *European Journal of Operational Research* 197(3) 969-980.
 17. Kao, C., Robertson, C., Kragh, F. and Lin, K.Y. 2011. Performance analysis and simulations of 32-ary cyclic code-shift keying. *International Journal of Communication Systems* 24(2) 258-268.
 18. Lin, K.Y. and Wei, Y. 2011. Optimal probing control for wireless transmission when the payload is negligible. *Optimal Control Applications and Methods* 32 558-573
 19. Lin, K.Y., Dayton J. 2011. Game-theoretic models for jamming radio-controlled improvised explosive devices. *Military Operations Research* 16(3) 5-13.
 20. Lin, K.Y., Atkinson, M.P., Chung, T.H., and Glazebrook, K.D. 2013. A graph patrol problem with random attack times. *Operations Research* 61(3) 694-710.
 21. Lin, K.Y. 2014. New results on a stochastic duel game with each force consisting of heterogeneous units. *Naval Research Logistics* 61(1) 56-65.
 22. Lin, K.Y. and MacKay, N.J. 2014. The optimal policy for the one-against-many heterogeneous Lanchester model. *Operations Research Letters* 42 473-477.
 23. Lin, K.Y., Atkinson, M.P., Glazebrook, K.D. 2014. Optimal patrol to uncover threats in time when detection is imperfect. *Naval Research Logistics* 61(8) 557-576 (2017 Kuhn Award).
 24. Lin, K.Y. and Singham D. 2016. Finding a hider by an unknown deadline. *Operations Research Letters* 44 25-32.
 25. James, T., Glazebrook, K.D., and Lin, K.Y. 2016. Developing effective service policies for multiclass queues with abandonment: asymptotic optimality and approximate policy improvement. *INFORMS Journal on Computing* 28(2) 251-264.
 26. McGrath, R.G., Lin, K.Y. 2017. Robust patrol strategies against attacks at dispersed heterogeneous locations. *International Journal of Operational Research* 30(3) 340-359.
 27. Kress, M., Lin, K.Y., MacKay, N.J. 2018. The attrition dynamics of multilateral war. *Operations Research* 66(4) 950-956.
 28. Lidbetter, T., Lin, K.Y. 2019. Searching for multiple objects in multiple locations. *European Journal of Operational Research* 278(2) 709-720.
 29. Clarkson J., Glazebrook, K.D., Lin, K.Y. 2020. Fast or slow: Search in discrete locations

- with two search modes. *Operations Research* 68(2) 552–571.
30. Hilliard, A., Lin, K.Y., Sparks R. 2020. Surface ship drydock schedule planner. *Naval Engineers Journal* 132(1) 63–72.
 31. Lidbetter, T., Lin, K.Y. 2020. A search game on a hypergraph with booby traps. *Theoretical Computer Science* 821 57–70.
 32. O'Malley, L.G., Lin, K.Y. 2021. A port loading model to minimize workload fluctuation for surface ship maintenance jobs. *Military Operations Research* 26(2) 75–87.
 33. Alpern, S., Chleboun, P., Katsikas, S., Lin, K.Y. 2022. Adversarial patrolling in a uniform. *Operations Research* 70(1) 129–140.
 34. Lin, K.Y. 2022. Optimal patrol of a perimeter. *Operations Research* 70(5) 2860–2866.
 35. Clarkson, J., Lin, K.Y., Glazebrook K.D. 2023. A classical search game in discrete locations. *Mathematics of Operations Research* 48(2) 687–707.
 36. Bui, T., Lidbetter, T., Lin, K.Y. 2024. Optimal pure strategies for a discrete search game. *European Journal of Operational Research* 313(2) 767–775.
 37. Donovan, R., Lin, K.Y. 2024. Stochastic duel with multiple players. *Military Operations Research* 29(4) 45–62.
 38. Clarkson, J., Lin, K.Y. 2024. Computing optimal strategies for a search game in discrete locations. *INFORMS Journal on Computing* (in press).

Other Publications

39. Lin, K.Y. 2004. Dynamic pricing: learning, robustness, and competition. *Proceeding 2004 NSF Design, Service and Manufacturing Grantees and Research Conference*, Dallas, Texas.
40. Sibdari, S., Lin, K.Y., and Chellappan S. 2006. Revenue Management of Auto Train at Amtrak. *12th IFAC Symposium on Information Control Problems in Manufacturing (INCOM 2006)*, volume 3, 449–455. May 17–19, 2006, Saint-Etienne, France.
41. Lin, K.Y., Kress, M., and Szechtman, R. 2006. Scheduling policies for an antiterrorist surveillance system. *NPS Technical Report NPS-OR-06-008*.
42. Lin, K.Y. and Lin, K.K. 2007. Winning advantage and its applications. *Retrosheet*.
43. Kao, C., Robertson, C., and Lin, K.Y. 2008. Performance analysis and simulation of cyclic code-shift keying, *Proc. IEEE Military Commun. Conf.*
44. Lin, K.Y. 2009. Game-theoretic models for jamming radio-controlled improvised explosive devices. *NPS Technical Report NPS-OR-09-004*.
45. Lin, K.Y. 2010. Discrete-time martingale. *Wiley Encyclopedia of Operations Research and Management Science*.
46. Lin, K.Y. and Washburn, A.R. 2010. The effect of decoys in IED warfare. *NPS Technical Report NPS-OR-10-007*.
47. Lin, K.Y. 2013. New results on a stochastic duel game with each force consisting of heterogeneous units. *NPS Technical Report NPS-OR-13-002*.
48. Lin, K.Y. and Singham, D.I. 2015. Robust search policies against an intelligent evader. *NPS Technical Report NPS-OR-15-009*.
49. Lin, K.Y. 2016. Analysis of Pricing Models in the defense industry to support cost projections. *NPS Technical Report NPS-OR-16-002*.

50. Lin, K.Y., Atkinson, P, Chen, S.L. 2017. Comprehensive aerial logistics management for the sea base. NPS Technical Report NPS-OR-17-001.
51. Atkinson, M., Lin, K.Y., Danielson, M., Coleman, S. 2018. Analysis of connector usage to support amphibious operations. NPS Technical Report NPS-18-M303-A.

Sponsored Research Programs

Principal Investigator or Co-Principal Investigator of 20+ projects funded by various research sponsors, including National Science Foundation, Office of Naval Research, Naval Surface Force Pacific, USMC Expeditionary Energy Office, and OPNAV N81.

1. National Science Foundation DMI-0223314. Operational-Level Dynamic Price Competition in the Service Industries. 2002–2005.
2. Naval Postgraduate School Research Initiative Program. Decision Making under Uncertainty with Military Applications. 2004–2006.
3. NPS-JIEDDO Research Program. Game-Theoretic Models for Jamming Remote-Controlled IEDs. 2007–2008.
4. World Class Modeling Initiatives (N81). Assembly of Sea Base Assets from Globally Dispersed Locations. 2007–2008.
5. NPS-JIEDDO Research Program. Extensions to Game-Theoretic Models for Jamming RCIEDs and Red Teaming. 2008–2009.
6. NPS-JIEDDO Research Program. The Effect of Decoys in IED Warfare. 2009–2010.
7. Office of Naval Research. Optimal Surveillance Patrol. 2010–2012.
8. Office of Naval Research. Optimal Surveillance Patrol with Extensions. 2012–2013.
9. TRAC-Monterey. Mission Command Analysis Using Monte Carlo Tree Search. 2012–2013.
10. Naval Research Program (N98). Analysis of Pricing Models in the Defense Industry to Support Cost Projections. 2014–2015.
11. Naval Research Program (N98). Comprehensive Aerial Logistics Management for the Sea Base. 2015–2017.
12. Naval Research Program (E2O). Analysis of Fuel Connector Usage. 2015–2017.
13. USMC Expeditionary Energy Office. Scheduling Ship to Shore Fuel Deliveries. 2016–2017.
14. Naval Research Program (NAVSEA). Surface Ship Port Loading Model Development. 2016–2018.
15. Naval Research Program (N98). Representing the Value of Carrier Aviation Presence. 2016–2018.
16. Commander, Naval Surface Force, Pacific. Port Loading Toolkit. 2017–2018.
17. Naval Research Program (E2O). Analysis of Connector Usage to Support Amphibious Operations. 2017–2018.
18. Commander, Naval Surface Force, Pacific. Drydock Schedule Optimization. 2018–2020.
19. Commander, Naval Surface Force, Pacific. Level Loading Surface Ship Maintenance Availabilities. 2020–2021.
20. Commander, Naval Surface Force, Pacific. Support for Surface Ship Drydock Schedule Planner. 2020–2020.
21. Naval Sea Systems Command. Optimal Scheduling of Ship Maintenance Availabilities. 2021–

2022.

Teaching Experience

Instructor of 90+ sections of 13 different courses over 20+ years in Virginia Tech and Naval Postgraduate School on subjects including stochastic models, probability and statistics, optimization, decision theory, risk benefit analysis, and naval tactical analysis. Recognition includes Rear Admiral John Jay Schieffelin Award for Teaching Excellence Top 5% (2019, Naval Postgraduate School), Paul E. Torgersen Outstanding Teaching Award (2004, Virginia Tech), and Teaching Assistant of the Year Award (1999, U.C. Berkeley). Course evaluation forms available upon request.

Naval Postgraduate School:

- OA 3301 Stochastic Models I
- OA 3304 Decision Theory
- OA 4301 Stochastic Models II
- OS 3111 Probability and Statistics for HSI and MOVES
- OS 3180 Probability and Statistics for Systems Engineering
- OS 3311 Probability Models for Military Applications
- OS 3680 Naval Tactical Analysis
- OS 4010 Engineering Risk Benefit Analysis
- OS 4011 Risk Benefit Analysis

Virginia Tech:

- ISE 2404 Deterministic Operations Research
- ISE 3414 Probabilistic Operations Research
- ISE 5414 Random Process
- ISE 5984 Random Process II

Thesis Committee Supervision

Advisor or coadvisor for 7 Ph.D. dissertations and 25 M.S. theses, and committee member for many more Ph.D. dissertations and M.S. theses. Student recognitions include Navy League Award, MORS Tilsdale Winner, Donald P. Gaver, Jr. Thesis Research Award, Surface Navy Association Award for Academic Excellence in Surface Warfare Research, Kingsman Prize (United Kingdom), and The Doctoral Award from the Operational Research Society (United Kingdom).

Naval Postgraduate School:

- Clifton Lennon and Jason McGowan, M.S. June 2006.
- Ohad Berman, M.S. December 2006. Co-Advisor (Advisor Moshe Kress).
- Trevor McLemore, M.S. June 2007.
- Jeffrey Koleser, M.S. September 2007.
- Donovan Phillips, Ph.D. June 2008. Co-Advisor (Advisor Wei Kang).
- Shian Kuen Wann, M.S. June 2008.
- Lanaya Martin and Josh Nickerson, M.S. June 2008. (Co-Advisor Yu-Chu Shen).
- Jeffrey Dayton, M.S. June 2009.
- Christopher Marsh, M.S. September 2009.

- Che Shiung Lin, M.S. September 2010.
- Richard McGrath, Ph.D. December 2013.
- Ittai Bar-Ilan, M.S. September 2014.
- Jan-Wilhelm Brendecke, M.S. June 2016. Co-Advisor (Advisor David Alderson).
- Samet Ansin Salin, M.S. June 2016.
- Samuel Chen, M.S. September 2016. (Co-Advisor Wei Kang).
- Robert Christafore, M.S. June 2017. Co-Advisor (Advisor Michael Atkinson).
- Roger Huffstetler, M.S. September 2017.
- Matthew Schaefer, M.S. September 2017. Surface Navy Association Award for Academic Excellence in Surface Warfare Research. (Co-Advisor Peter Ward).
- Matthew Danielson. M.S. June 2018. Co-Advisor (Advisor Michael Atkinson).
- Adam Hilliard. M.S. March 2019. MORS Tisdale Winner. Navy League Award. (Co-Advisor Matthew Carlyle).
- Lauren G. O'Malley. M.S. June 2020. MORS Tisdale Winner.
- Sarah Naldo. M.S. June 2021.
- Robert Donovan. M.S. June 2023. Donald P. Gaver, Jr. Thesis Research Award.
- Merril D. Kline II. M.S. September 2023. Co-Advisor (Advisor Johnathan C. Mun).
- Fredrick Stanford. M.S. June 2024.

Lancaster University:

- Terry James. Ph.D. 2016. External Advisor (Advisor Kevin Glazebrook).
- Jake Clarkson. Ph.D. 2020. External Advisor (Advisor Kevin Glazebrook). Kingsman Prize 2020. The Doctoral Award from The Operational Research Society 2021.
- Edward Mellor. Ph.D. 2024. External Advisor (Advisor Kevin Glazebrook).

Virginia Tech:

- Kwan-Ang An, M.S. May 2003.
- Feng Li, M.S. December 2003.
- Soheil Sibdari, Ph.D. May 2005.
- Pornthipa Ongkunaruk, Ph.D. December 2005. Co-chair (Chair Ann Chan).

Professional Activities

- Associate Editor, Naval Research Logistics. 4/2018–present.
- Associate Editor, Operations Research. 11/2005–12/2023.
- Associate Editor, Omega, 5/2011–6/2014.
- Member, National Science Foundation review panel, 2002, 2004, 2014.
- Member, INFORMS George Nicholson Student Paper Competition Committee, 2004, 2005.

Technical Skills

Programming: Python (NumPy, pandas, Pyomo, scikit-learn), Matlab, C++

Techniques: Probability Modeling, Optimization, Simulation, Game Theory, ML/AI

Development Tools: Git, Jupyter, SQL, L^AT_EX, Overleaf

Soft Skills: Project leadership, technical writing, cross-functional collaboration, Mandarin Chinese