Ji-Woong Lee

Curriculum Vitae

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Career Objective

Research in stochastic, decentralized, and hybrid control systems, and in statistical learning; Application to complex problems in biomedicine, distributed networks, and power systems

1 Contact Information

- **Address**
  Pennsylvania State University
  227E Electrical Engineering West
  University Park PA 16802

- **Email**
  jiwoong@psu.edu

2 Education

- **Ph.D.** in Electrical Engineering: Systems,
  University of Michigan, Ann Arbor, MI, USA, 2002.
  Thesis Title: *Nonlinear Filtering for Real-Time Sensing of Patterned Wafers*
  (Advisor: Professor Pramod P. Khargonekar)

- **M.S.** in Mathematics,
  University of Michigan, Ann Arbor, MI, USA, 2002.

- **M.S.** in Electrical Engineering (with thesis),
  University of Maryland, College Park, MD, USA, 1996.
  Thesis Title: *Stochastic Control with Bifurcation*
  (Advisor: Professor Gilmer L. Blankenship)

- **B.S.** in Electronic Engineering (with honors),
  Sogang University, Seoul, KOREA, 1990.

3 Academic Positions

- **Assistant professor** at Dept. of Electrical Engineering,
  Pennsylvania State University, University Park, 2007–present.

- **Postdoctoral associate** at Dept. of Electrical & Computer Engineering,
  University of Florida, Gainesville, 2005–2007.
  (Advisor: Professor Pramod P. Khargonekar)

- **Postdoctoral research associate** at Coordinated Science Laboratory, University of Illinois at Urbana-Champain, 2003–2005. (Advisor: Professor Geir E. Dullerud)
- **Research assistant** at Dept. of Electrical Engineering & Computer Science, University of Michigan, Ann Arbor, 1998–2002.
- **Teaching assistant** at Dept. of Electrical Engineering & Computer Science, University of Michigan, Ann Arbor, 1998.
- **Research assistant** at Dept. of Electrical Engineering, University of Maryland, College Park, 1995–1997.

4 Academic Honors, Awards, and Memberships

- **Charles H. Fetter University Endowed Fellowship in Electrical Engineering**, Pennsylvania State University, 2011–present.
- **Best Presentation in Session** at the 2010 American Control Conference, 2010.
- **Honorable Mention** in Student Paper Competition, AEC/APC Symposium XIV, 2002.
- **B.S. Cum Laude** from Sogang University, 1990.
- **Scholarships** from Sogang University, 1986–1989.
- **Student Member/Member** of IEEE, 1997–present.

5 Research Activities

5.1 Book Chapters

- J.-W. Lee and G. E. Dullerud, "Robust stabilization and disturbance attenuation of switched linear parameter-varying systems in discrete time," in J. Mohammadpour and C. W. Scherer (Eds.), *Control of Linear Parameter Varying Systems with Applications*, Springer, 2012, pp. 157–179.

5.2 Journal Publications

- S. Mirzazad-Barijough and J.-W. Lee, "Stability and transient performance of discrete-time piecewise affine systems," *IEEE Transactions on Automatic Control*, vol. 57, no. 4, pp. 936–949, 2012.
- J.-W. Lee and G. E. Dullerud, "Supervisory control and measurement scheduling for discrete-time linear systems," *IEEE Transactions on Automatic Control*, vol. 56, no. 4, pp. 873–879, 2011.
- J.-W. Lee, "Dynamic decentralized sequential detection under uniformly distributed observations," *IEEE Transactions on Automatic Control*, vol. 54, no. 11, pp. 2707–2714, 2009.
- J.-W. Lee and P. P. Khargonekar, "Distribution-free consistency of empirical risk minimization and support vector regression," *Mathematics of Control, Signals, and Systems*, vol. 21, no. 2, pp. 111–125, 2009.
- J.-W. Lee, "Infinite-horizon joint LQG synthesis of switching and feedback in discrete time," *IEEE Transactions on Automatic Control*, vol. 54, no. 8, pp. 1945–1951, 2009.
- J.-W. Lee and P. P. Khargonekar, "Detectability and stabilizability of discrete-time switched linear systems," *IEEE Transactions on Automatic Control*, vol. 54, no. 3, pp. 424–437, 2009.
- J.-W. Lee, "Inequality-based properties of detectability and stabilizability of linear time-varying systems in discrete time," *IEEE Transactions on Automatic Control*, vol. 54, no. 3, pp. 634–641, 2009.

- J.-W. Lee and G. E. Dullerud, "Dynamic sequential team multi-hypothesis testing under uniformly distributed nonstationary observations," *Systems & Control Letters*, vol. 57, no. 12, pp. 1030–1036, 2008.
- J.-W. Lee and P. P. Khargonekar, "Optimal output regulation for discrete-time switched and Markovian jump linear systems," *SIAM Journal on Control and Optimization*, vol. 47, no. 1, pp. 40–72, 2008.
- J.-W. Lee and P. P. Khargonekar, "Constrained infinite-horizon linear quadratic regulation of discrete-time systems," *IEEE Transactions on Automatic Control*, vol. 52, no. 10, pp. 1951–1958, 2007.
- J.-W. Lee and G. E. Dullerud, "Uniformly stabilizing sets of switching sequences for switched linear systems," *IEEE Transactions on Automatic Control*, vol. 52, no. 5, pp. 868–874, 2007.
- J.-W. Lee and G. E. Dullerud, "A stability and contractiveness analysis of discrete-time Markovian jump linear systems," *Automatica*, vol. 43, no. 1, pp. 168–173, 2007.
- J.-W. Lee, "On uniform stabilization of discrete-time linear parameter-varying control systems," *IEEE Transactions on Automatic Control*, vol. 51, no. 10, pp. 1714–1721, 2006.
- J.-W. Lee and G. E. Dullerud, "Optimal disturbance attenuation for discrete-time switched and Markovian jump linear systems," *SIAM Journal on Control and Optimization*, vol. 45, no. 4, pp. 1329–1358, 2006.
- J.-W. Lee and G. E. Dullerud, "Uniform stabilization of discrete-time switched and Markovian jump linear systems," *Automatica*, vol. 42, no. 2, pp. 205–218, 2006.
- J.-W. Lee and P. P. Khargonekar, "A convex optimization–based nonlinear filtering algorithm with applications to real-time sensing for patterned wafers," *IEEE Transactions on Automatic Control*, vol. 48, no. 2, pp. 224–235, 2003.

5.3 Conference Publications

- R. Essick, J.-W. Lee, and G. E. Dullerud, "An exact convex solution to receding horizon control," *Proceedings of the 2012 American Control Conference*, 2012, to appear.
- S. Mirzazad-Barijough and J.-W. Lee, "Finite-state simulations and bisimulations for discrete-time piecewise affine systems," *Proceedings of the 50th IEEE Conference on Decision and Control, and the European Control Conference*, 2011, pp. 8020–8025.
- S. Ghosh and J.-W. Lee, "Optimal synthesis for finite-time consensus under fixed graphs," *Proceedings of the 50th IEEE Conference on Decision and Control, and the European Control Conference*, 2011, pp. 2052–2057.
- J.-W. Lee and G. E. Dullerud, "Joint synthesis of switching and feedback for linear systems in discrete time," *Proceedings of the 14th ACM International Conference on Hybrid Systems: Computation and Control*, 2011, pp. 201–209.
- S. Mirzazad-Barijough and J.-W. Lee, "On stability and performance analysis of discrete-time piecewise affine systems," *Proceedings of the 49th IEEE Conference on Decision and Control*, 2010, pp. 4244–4249.
- T. Lu and J.-W. Lee, "Polytopic linear parameter-varying model of epileptiform activity," *Proceedings of the 2010 American Control Conference*, 2010, pp. 468–473.
  `Best Presentation in Session Award.`
- S. Mirzazad-Barijough and J.-W. Lee, "On stability characterization of discrete-time piecewise linear systems," *Proceedings of the 2010 American Control Conference*, 2010, pp. 916–921.
  `Best Presentation in Session Award.`

- S. Ghosh and J.-W. Lee, "Equivalent conditions for uniform asymptotic consensus among distributed agents," *Proceedings of the 2010 American Control Conference*, 2010, pp. 4821–4826.
- S. A. Krishnamurthy and J.-W. Lee, "A computational stability analysis of discrete-time piecewise linear systems," *Proceedings of the 48th IEEE Conference on Decision and Control, and the 28th Chinese Control Conference*, 2009, pp. 1106–1111.
- J.-W. Lee, "Uniform consensus among self-driven particles," in R. Majumdar and P. Tabuada (Eds.), *Hybrid Systems: Computation and Control*, Lecture Notes in Computer Science 5469, 2009, pp. 252–261.
- J.-W. Lee, G. E. Dullerud, and P. P. Khargonekar, "Path-by-path optimal control of switched and Markovian jump linear systems," *Proceedings of the 47th IEEE Conference on Decision and Control*, 2008, pp. 5324–5329.
- J.-W. Lee and P. P. Khargonekar, "Output variance–constrained LQG control of discrete-time systems," *Proceedings of the 17th IFAC World Congress*, 2008, vol. 17, pp. 2508–2513.
- J.-W. Lee, "Separation in stability analysis of piecewise linear systems in discrete time," in M. Egerstedt and B. Mishra (Eds.), *Hybrid Systems: Computation and Control*, Lecture Notes in Computer Science 4981, 2008, pp. 626–629.
- J.-W. Lee, G. E. Dullerud, and P. P. Khargonekar, "An output regulation problem for switched linear systems in discrete time," *Proceedings of the 46th IEEE Conference on Decision and Control*, 2007, pp. 4993–4998.
- J.-W. Lee and G. E. Dullerud, "Uniform disturbance attenuation for Markovian jump linear systems in discrete time," *Proceedings of the 44th IEEE Conference on Decision and Control, and the European Control Conference 2005*, 2005, vol. 1, pp. 860–865.
- J.-W. Lee and G. E. Dullerud, "A dynamic decentralized sequential multi-hypothesis testing problem under uniformly distributed nonstationary observations," *Proceedings of the 43rd IEEE Conference on Decision and Control*, 2004, vol. 2, pp. 1976–1981.
- J.-W. Lee and P. P. Khargonekar, "Generalization ability of a class of empirical risk minimization algorithms and the support vector regression method," *Proceedings of the 42nd IEEE Conference on Decision and Control*, 2003, vol. 3, pp. 2942–2947.
- J.-W. Lee and G. E. Dullerud, "Analysis of mode-dependent statistics of Markovian jump linear systems," *Proceedings of the 42nd IEEE Conference on Decision and Control*, 2003, vol. 5, pp. 5031–5032.
- J.-W. Lee, "Decentralized Bayesian sequential detection under uniformly distributed observations," *Proceedings of the 41st IEEE Conference on Decision and Control*, 2002, vol. 4, pp. 4772–4777.
- J.-W. Lee, H.-T. Huang, P. P. Khargonekar, and F. L. Terry, Jr., "Angle of incidence–free real-time state estimation for patterned wafers," *AEC/APC Symposium XIV*, 2002.
  Honorable Mention in Student Paper Competition.
- J.-W. Lee and P. P. Khargonekar, "Simulation-based nonlinear filtering with bounded disturbances and redundant observations," *Proceedings of the 40th IEEE Conference on Decision and Control*, 2001, vol. 3, pp. 2125–2130.
- H.-T. Huang, J.-W. Lee, P. Klimecky, P. P. Khargonekar, and F. L. Terry, Jr., "In situ monitoring of deep sub-micron topography evolution and endpoint during reactive ion etching," *AEC/APC Symposium XIII Proceedings*, 2001.
- H.-T. Huang, J.-W. Lee, B. S. Stutzman, P. Klimecky, C. Garvin, P. P. Khargonekar, and F. L. Terry, Jr., "Real-time in situ monitoring of deep sub-micron topography evolution during reaction ion etching," *AEC/APC Symposium XII Proceedings*, 2000, vol. 2, pp. 727–738.
  Outstanding Student Paper Award.

6 Service Activities

- **Associate Editor** for the Conference Editorial Board, IEEE Control Systems Society, 2011–present.
- **Reviewer** for 12 journals and 6 conferences including IEEE Transactions on Automatic Control, Automatica, SIAM Journal on Control and Optimization, Systems & Control Letters, IEEE Conference on Decision and Control, and American Control Conference, 2003–present.
- **Session Chair** at the IEEE Conference on Decision and Control, and the American Control Conference, 2003, 2010, and 2011.
- **Review Panelist** for NSF CPS and EPAS programs, 2009, 2011, and 2012.
- **Faculty Reviewer/Session Chair** for the College of Engineering Research Symposium, Pennsylvania State University, 2009-2012.
- **Member/Candidacy Exam Coordinator** of the graduate committee, Department of Electrical Engineering, Pennsylvania State University, 2008–2012.
- **Military service** in the 3376 Engineer Corps, KOREA, 1990–1992.
- **President** of Sogang Taekwondo Club, Sogang University, KOREA, 1987–1988.

7 References

Available upon request