

# GUOSONG YANG

Department of Electrical and Computer Engineering  
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## POSITION

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**University of California, Santa Barbara**, Santa Barbara, CA, USA 2017–present  
Postdoctoral Scholar  
Center for Control, Dynamical Systems, and Computation  
Department of Electrical and Computer Engineering  
Advisor: [João P. Hespanha](#)

## EDUCATION

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**University of Illinois at Urbana-Champaign**, Urbana, IL, USA 2013–2017  
Ph.D. in Electrical and Computer Engineering  
Advisor: [Daniel Liberzon](#)  
Dissertation: “Switched and hybrid systems with inputs: small-gain theorems, control with limited information, and topological entropy”

**University of Illinois at Urbana-Champaign**, Urbana, IL, USA 2011–2013  
M.S. in Electrical and Computer Engineering  
Advisor: [Daniel Liberzon](#)  
Thesis: “A Lyapunov-based small-gain theorem for interconnected switched systems”

**Hong Kong University of Science and Technology**, Hong Kong 2007–2011  
B.Eng. in Electronic Engineering (Honors Research Option)  
Minor in Mathematics  
Advisor: [Zexiang Li](#)

## AWARDS AND HONORS

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- *ACM SIGBED HSCC Best Paper Award* at the 22nd ACM International Conference on Hybrid Systems: Computation and Control, 2019
- *Best Poster Award* at the 11th Coordinated Science Laboratory Student Conference, University of Illinois at Urbana-Champaign, 2016
- *Graduate College Conference Travel Award*, University of Illinois at Urbana-Champaign, 2016
- *University Scholarship, School of Engineering Scholarship, ECE Outstanding Freshmen Scholarship, The Joseph Lau Luen Hung Charitable Trust Scholarship*, Hong Kong University of Science and Technology, 2007–2011
- *Gold medal*, 8th Asian Physics Olympiad, 2007

## RESEARCH INTERESTS

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- Switched and hybrid systems
- Networked systems
- Control with limited information
- Network security

## PUBLICATIONS

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### Journals

- Guosong Yang, A. James Schmidt, Daniel Liberzon, and João P. Hespanha, “Topological entropy of switched linear systems: General matrices and matrices with commutation relations,” submitted for publication
- Guosong Yang and Daniel Liberzon, “Feedback stabilization of a switched linear system with an unknown disturbance under data-rate constraints,” *IEEE Transactions on Automatic Control*, vol. 63, no. 7, pp. 2107–2122, Jul. 2018
- Kuniyoshi Okano, Masashi Wakaiki, Guosong Yang, and João P. Hespanha, “Stabilization of networked control systems under clock offsets and quantization,” *IEEE Transactions on Automatic Control*, vol. 63, no. 6, pp. 1708–1723, Jun. 2018
- Andrii Mironchenko, Guosong Yang, and Daniel Liberzon, “Lyapunov small-gain theorems for networks of not necessarily ISS hybrid systems,” *Automatica*, vol. 88, pp. 10–20, Feb. 2018
- Guosong Yang and Daniel Liberzon, “A Lyapunov-based small-gain theorem for interconnected switched systems,” *Systems & Control Letters*, vol. 78, pp. 47–54, Apr. 2015

### Conferences

- Guosong Yang, Radha Poovendran, and João P. Hespanha, “Adaptive learning in two-player Stackelberg games with continuous action sets,” in *58th IEEE Conference on Decision and Control*, 2019, to be published
- Guosong Yang, João P. Hespanha, and Daniel Liberzon, “On topological entropy and stability of switched linear systems,” in *22nd ACM International Conference on Hybrid Systems: Computation and Control*, 2019, pp. 119–127 (Best Paper Award winner)
- Guosong Yang and João P. Hespanha, “On topological entropy of switched linear systems with pairwise commuting matrices,” in *56th Annual Allerton Conference on Communication, Control, and Computing*, 2018, pp. 429–436 (invited paper)
- Guosong Yang, A. James Schmidt, and Daniel Liberzon, “On topological entropy of switched linear systems with diagonal, triangular, and general matrices,” in *57th IEEE Conference on Decision and Control*, 2018, pp. 5682–5687
- Guosong Yang, Hossein Hosseini, Dinuka Sahabandu, Andrew Clark, João P. Hespanha, and Radha Poovendran, “Modeling and mitigating the Coremelt attack,” in *2018 American Control Conference*, 2018, pp. 3410–3416
- Guosong Yang, Daniel Liberzon, and Zhong-Ping Jiang, “Stabilization of interconnected switched control-affine systems via a Lyapunov-based small-gain approach,” in *2017 American Control Conference*, 2017, pp. 5182–5187

- Guosong Yang, Daniel Liberzon, and Andrii Mironchenko, “Analysis of different Lyapunov function constructions for interconnected hybrid systems,” in *55th IEEE Conference on Decision and Control*, 2016, pp. 465–470 (invited paper)
- Guosong Yang and Daniel Liberzon, “Finite data-rate stabilization of a switched linear system with unknown disturbance,” in *10th IFAC Symposium on Nonlinear Control Systems*, vol. 49, no. 18, 2016, pp. 1085–1090
- Guosong Yang and Daniel Liberzon, “Stabilizing a switched linear system with disturbance by sampled-data quantized feedback,” in *2015 American Control Conference*, 2015, pp. 2193–2198
- Guosong Yang and Daniel Liberzon, “Input-to-state stability for switched systems with unstable subsystems: A hybrid Lyapunov construction,” in *53rd IEEE Conference on Decision and Control*, 2014, pp. 6240–6245
- Andrii Mironchenko, Guosong Yang, and Daniel Liberzon, “Lyapunov small-gain theorems for not necessarily ISS hybrid systems,” in *21st International Symposium on Mathematical Theory of Networks and Systems*, 2014, pp. 1001–1008

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#### GRANT-WRITING EXPERIENCE

- Coauthor of National Science Foundation grant [CMMI-1662708](#): “Switched control systems with limited information: An entropy approach to stabilization and disturbance attenuation,” PI: [Daniel Liberzon](#), 2017–2020, Amount: \$349,540

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#### PRESENTATIONS AND SEMINARS

- Presentation at the [22nd ACM International Conference on Hybrid Systems: Computation and Control](#), Montreal, Canada, Apr. 2019 (Best Paper Award winner)
- Presentation at the [57th IEEE Conference on Decision and Control](#), Miami Beach, FL, USA, Dec. 2018
- Presentation at the [35th Southern California Control Workshop](#), University of California, Los Angeles, CA, USA, Nov. 2018
- Invited presentation at the [56th Annual Allerton Conference on Communication, Control, and Computing](#), Monticello, IL, USA, Oct. 2018
- Presentation at the [2018 American Control Conference](#), Milwaukee, WI, USA, Jun. 2018
- Presentation at the [2017 American Control Conference](#), Seattle, WA, USA, May. 2017
- Seminar at the [Multi-Agent Robotics Lab](#), University of California, San Diego, CA, USA, Mar. 2017
- Seminar at the [Hybrid Systems Laboratory](#), University of California, Santa Cruz, CA, USA, Feb. 2017
- Invited presentation at the [55th IEEE Conference on Decision and Control](#), Las Vegas, NV, USA, Dec. 2016
- Seminar at the [Center for Control, Dynamical Systems, and Computation](#), University of California, Santa Barbara, CA, USA, Nov. 2016
- Seminar at the [Cyber-Physical Systems Laboratory](#), University of California, Los Angeles, CA, USA, Oct. 2016

- Presentation at the [10th IFAC Symposium on Nonlinear Control Systems](#), Monterey, CA, USA, Aug. 2016
- Poster presentation at the [11th Coordinated Science Laboratory Student Conference](#), Urbana, IL, USA, Feb. 2016 (Best Poster Award winner)
- Presentation at the [2015 American Control Conference](#), Chicago, IL, USA, Jul. 2015
- Presentation at the [53rd IEEE Conference on Decision and Control](#), Los Angeles, CA, USA, Dec. 2014
- Presentation at the [2nd Midwest Workshop on Control and Game Theory](#), University of Notre Dame, Notre Dame, IN, USA, Apr. 2013

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## TEACHING

### University of Illinois at Urbana-Champaign, Urbana, IL, USA

- Teaching assistant for graduate course “[Nonlinear and Adaptive Control \(ECE517\)](#)”
- Teaching assistant for graduate course “[Analysis of Nonlinear Systems \(ECE528\)](#)”

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## SERVICE

### Journal reviewer

- [IEEE Transactions on Automatic Control](#)
- [IFAC Automatica](#)
- [System & Control Letters](#)
- [Nonlinear Analysis: Hybrid Systems](#)
- [IEEE Control Systems Letters](#)

### Conference reviewer

- American Control Conference: [ACC 2017](#) and [ACC 2018](#)
- ACM International Conference on Hybrid Systems: Computation and Control: [HSCC 2016](#) and [HSCC 2017](#)
- IFAC Conference on Modelling, Identification and Control of Nonlinear Systems: [MICNON 2015](#)
- IFAC Workshop on Distributed Estimation and Control in Networked Systems: [NecSys 2019](#)