

# Jing Shuang (Lisa) Li

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## Education

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**California Institute of Technology** – Ph.D. in Control & Dynamical Systems

*Sep 2018 – Jun 2023 (Expected)*

Thesis: Distributed Control Theory for Cyberphysical and Biological Systems

Advisor: John C. Doyle

**University of Toronto** – B.A.Sc. in Engineering Science, Electrical Engineering Major

*Sep 2013 – Jun 2018*

Cumulative GPA: 3.92/4.0

## Papers

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- [1] **J. S. Li**, J. C. Doyle, “Distributed Robust Control for Systems with Structured Uncertainties”, to appear at *IEEE Conference on Decision and Control*, 2022 [[pdf](#)]
- [2] L. Conger, **J. S. Li**, E. Mazumdar, S. L. Brunton, “Nonlinear System Level Synthesis for Polynomial Dynamical Systems”, to appear at *IEEE Conference on Decision and Control*, 2022 [[pdf](#)]
- [3] C. Amo Alonso, **J. S. Li**, N. Matni, J. Anderson, “Distributed and Localized Model Predictive Control. Part II: Theoretical Guarantees”, Submitted to *IEEE Transactions on Control of Network Systems*, 2022 [[pdf](#)]
- [4] C. Amo Alonso, **J. S. Li**, J. Anderson, N. Matni, “Distributed and Localized Model Predictive Control. Part I: Synthesis and Implementation”, to appear in *IEEE Transactions on Control of Network Systems*, 2022 [[pdf](#)]
- [5] **J. S. Li**, “Internal Feedback in Biological Control: Locality and System Level Synthesis”, in *IEEE American Control Conference*, pp. 474–479, 2022 [[pdf](#)] **Best student paper finalist (1 of 5)**
- [6] J. Stenberg, **J. S. Li**, A. A. Sarma, J. C. Doyle, “Internal Feedback in Biological Control: Diversity, Delays, and Standard Theory”, in *IEEE American Control Conference*, pp. 462–467, 2022 [[pdf](#)]
- [7] A. A. Sarma, **J. S. Li**, J. Stenberg, G. Card, E. S. Heckscher, N. Kasthuri, T. Sejnowski, J. C. Doyle, “Internal Feedback in Biological Control: Constraints and Layered Architectures”, in *IEEE American Control Conference*, pp. 456–461, 2022 [[pdf](#)]
- [8] **J. S. Li**, C. Amo Alonso, J. C. Doyle, “Frontiers in Scalable Distributed Control: SLS, MPC, and Beyond”, in *IEEE American Control Conference*, pp. 2720–2725, 2021 [[pdf](#)]
- [9] **J. S. Li**, D. Ho, “Separating Controller Design from Closed-Loop Design: A New Perspective on System-Level Controller Synthesis”, in *IEEE American Control Conference*, pp. 3529–3534, 2020 [[pdf](#)]

## Posters, Talks, Toolboxes

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**J. S. Li**, J. Yu, C. Amo Alonso, J. C. Doyle, “System Level Synthesis: New Frontiers in Distributed Control” Organizer and speaker for full-day workshop to appear at *IEEE Conference on Decision and Control*, 2022

J. C. Doyle, C. Amo Alonso, **J. S. Li**, F. Xiao, “Rule-Based Systems Theory for Regulation in Networks of Biomolecules, Microbial Cells and Populations”. Poster at *8<sup>th</sup> Build-a-Cell Workshop*, 2022

**J. S. Li**, “Internal Feedback Pathways: From Control Theory to Sensorimotor Systems (and beyond)”. Invited seminar talk at *Center for Computational Neuroscience, Flatiron Institute* (Simons Foundation), 2021

**J. S. Li**, “Internal Feedback: From Optimal Control to the Sensorimotor System”. Poster at *Chen Institute for Neuroscience Poster Session*, 2021

S. H. Tseng, **J. S. Li**, “SLSpy: Python-Based System-Level Controller Synthesis Framework”, 2020 [[pdf](#)] [[code](#)]

**J. S. Li**, S. H. Tseng, “SLS-MATLAB Toolbox: Do-It-Yourself System Level Synthesis”. Poster at *IEEE American Control Conference*, 2020 [[code](#)]

**J. S. Li**, J. Yu, C. Amo Alonso, J. C. Doyle, “System Level Synthesis: Distributed Control Made Easy”. Poster at *Center for Autonomous Systems and Technologies (CAST) Scientific Showcase*, 2020

## Funding History

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NSERC PGS – Doctoral (63K CAD over 36 months)	<i>Awarded May 2021</i>
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NSERC CGS – Doctoral (105K CAD over 36 months)	<i>Offered Apr 2021, declined</i>
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NSERC USRA (6K CAD over 4 months)	<i>Awarded twice: May 2015, May 2016</i>
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## Teaching

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Teaching assistant, Introduction to Distributed Algorithms (CS 142)	<i>Fall 2022</i>
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Teaching assistant, Robust Control Theory (CDS 231)	<i>Spring 2022</i>
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Teaching assistant, Introduction to Distributed Algorithms (CS 142)	<i>Fall 2021</i>
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Teaching assistant, Introduction to Feedback Control Systems (CDS 110)	<i>Spring 2021</i>
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Head teaching assistant, Relational Databases (CS 121)	<i>Winter 2021</i>
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Teaching assistant, Robust Control Theory (CDS 231)	<i>Winter 2020</i>
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Teaching assistant, Network Control Systems (CDS 141)	<i>Spring 2020</i>
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## Advising & Mentorship

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Lauren Conger, PhD student at Caltech

Josefin Stenberg, summer intern at Caltech

## **Diversity, Equity, and Inclusion**

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Treasurer, Caltech Canadian Club	<i>May 2021 – Present</i>
Catalina Community Associate	<i>Nov 2020 – Jun 2022</i>
Mentor for international, departmental, and diversity programs	<i>Oct 2020 – Jun 2022</i>
Chair, Graduate Women in CMS	<i>Feb 2020 – May 2022</i>
Member (1 of 9), departmental Graduate Advisory Council	<i>Oct 2019 – Oct 2021</i>
Organizer (1 of 2), departmental PhD Preliminary Exam Prep Sessions	<i>Oct 2019 – Aug 2020</i>
Orientation leader and peer panelist, international and departmental orientation	<i>Sep 2019, Sep 2020</i>

## **Academic Service**

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Conference reviewer: IEEE Conference on Decision and Control 2021, 2022

Journal reviewer: IEEE Transactions on Vehicular Technology

## **Additional Work & Research Experience**

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<b>Piano and Voice Instructor, Lippert Music Center</b>	<i>Sep 2012 – Jun 2018</i>
Taught private music lessons and prepared students for Royal Conservatory exams and competitions	
<b>Undergraduate Thesis, Reconfigurable Antenna Lab</b> (with Prof. Sean Hum)	<i>Sep 2017 – Apr 2018</i>
Project: Neural network inverse models for electromagnetic metasurface design	
<b>Full-Time Software Engineering Intern, Verity Studios AG</b>	<i>Sep 2016 – Aug 2017</i>
Wrote code in Python, C++, and SQL to support drone flight planning, evaluation, and simulation	
<b>Student Researcher, Reconfigurable Antenna Lab</b> (with Prof. Sean Hum)	<i>May 2016 – Aug 2016</i>
Project: C++ simulation tool for periodic electromagnetic scatterers	
<b>Student Researcher, Lab for Advanced Power Conversion</b> (with Prof. Peter Lehn)	<i>May 2015 – Aug 2015</i>
Project: Wireless energy harvester for smart-grid monitoring applications	
<b>Student Researcher, Nanomaterials Lab</b> (with Prof. Ho Ghim Wei)	<i>May 2014 – Aug 2014</i>
Project: Copper-based nanostructures for photocatalytic hydrogen production	

## **Additional Skills**

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**Programming and scripting:** MATLAB, Python, C++, SQL

**Foreign languages:** Mandarin Chinese (fluent), French (basic)

**Software:** Unreal Engine, COMSOL Multiphysics, Altium Designer

**Instruments:** piano, voice (classical, musical theatre, pop), cello, guitar

*Certifications from the Royal Conservatory of Music*

Associate (ARCT) in Piano Performance, 1<sup>st</sup> Class Honours (practical only)

Grade 10 comprehensive certificate in Piano Performance, 1<sup>st</sup> Class Honours

Grade 10 comprehensive certificate in Vocal Performance, 1<sup>st</sup> Class Honours