Jing Shuang (Lisa) Li

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Education

California Institute of Technology – Ph.D. in Control & Dynamical Systems *09/2018 – Present*
Advisor: John C. Doyle
Committee: Richard Murray, Steven Low, James Anderson

University of Toronto – B.A.Sc. in Engineering Science, Electrical Engineering Major *09/2013 – 06/2018*
Cumulative GPA: 3.92/4.0

Papers

[1] **J. S. Li** and J. C. Doyle, "Distributed Robust Control for Systems with Structured Uncertainties". Submitted. Preprint available at https://arxiv.org/abs/2204.02493

[2] L. Conger, **J. S. Li**, E. Mazumdar, S. L. Brunton, "Nonlinear System Level Synthesis for Polynomial Dynamical Systems". Submitted.

[3] C. Amo Alonso, **J. S. Li**, N. Matni, J. Anderson, "Distributed and Localized Model Predictive Control. Part II: Theoretical Guarantees". Submitted. Preprint available at https://arxiv.org/abs/2203.00780

[4] C. Amo Alonso, **J. S. Li**, J. Anderson, N. Matni, "Distributed and Localized Model Predictive Control. Part I: Synthesis and Implementation". Submitted. Preprint available at https://arxiv.org/abs/2110.07010

[5] **J. S. Li**, "Internal Feedback in Biological Control: Locality and System Level Synthesis", to appear in *IEEE American Control Conference*, 2022. Also available at https://arxiv.org/abs/2109.11757. ***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", to appear in *IEEE American Control Conference*, 2022. Also available at https://arxiv.org/abs/2109.11752

[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", to appear in *IEEE American Control Conference*, 2022. Also available at https://arxiv.org/abs/2110.05029

[8] **J. S. Li**, C. Amo Alonso, J. C. Doyle, "Frontiers in Scalable Distributed Control: SLS, MPC, and Beyond", in *Proc. IEEE American Control Conference*, 2021, pp.2720–2725. Also available at https://arxiv.org/abs/2010.01292

[9] **J. S. Li** and D. Ho, "Separating Controller Design from Closed-Loop Design: A New Perspective on System-Level Controller Synthesis", in *Proc. IEEE American Control Conference*, 2020, pp. 3529–3534. Also available at https://arxiv.org/abs/2006.05040

Posters, Talks, Toolboxes

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 @ 8th Build-a-Cell Workshop, Mar 2022

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

J. S. Li, "Internal Feedback: From Optimal Control to the Sensorimotor System". Poster @ Chen Institute for Neuroscience Poster Session, Mar 2021

S. H. Tseng and **J. S. Li**, "SLSpy: Python-Based System-Level Controller Synthesis Framework". Preprint available at https://arxiv.org/abs/2004.12565, toolbox available at https://github.com/sls-caltech/sls-code

J. S. Li and S. H. Tseng, "SLS-MATLAB Toolbox: Do-It-Yourself System Level Synthesis". Poster @ American Control Conference 2020. Toolbox available at https://github.com/sls-caltech/sls-code

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

Funding

NSERC PGS – Doctoral (63K CAD over 36 months)	*Awarded 05/2021*
NSERC CGS – Doctoral (105K CAD over 36 months)	*Offered 04/2021, declined*
NSERC USRA (6K CAD over 4 months)	*Awarded twice: 05/2015, 05/2016*

Teaching

Teaching assistant, Robust Control Theory (CDS 231)	*Spring 2022*
Teaching assistant, Introduction to Distributed Algorithms (CS 142)	*Fall 2021*
Teaching assistant, Introduction to Feedback Control Systems (CDS 110)	*Spring 2021*
Head teaching assistant, Relational Databases (CS 121)	*Winter 2021*
Teaching assistant, Robust Control Theory (CDS 231)	*Winter 2020*
Teaching assistant, Network Control Systems (CDS 141)	*Spring 2020*

Academic Service

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

Journal reviewer: IEEE Transactions on Vehicular Technology

Community Activities

Treasurer, Caltech Canadian Club *05/2021 – Present*

Catalina Community Associate *11/2020 – Present*

Mentor for international, departmental, and diversity programs *10/2020 – Present*

Chair, Graduate Women in CMS *02/2020 – Present*

Member (1 of 9), departmental Graduate Advisory Council *10/2019 – 10/2021*

Organizer (1 of 2), departmental PhD Preliminary Exam Prep Sessions *10/2019 – 08/2020*

Orientation leader and peer panelist, international and departmental orientation *09/2019, 09/2020*

Additional Experience

Piano and Voice Instructor, Lippert Music Center *09/2012 – 06/2018*
Taught private music lessons and prepared students for Royal Conservatory exams and competitions

Undergraduate Thesis, Reconfigurable Antenna Lab (with Prof. Sean Hum) *09/2017 – 04/2018*
Project: Neural network inverse models for electromagnetic metasurface design

Full-Time Software Engineering Intern, Verity Studios AG *09/2016 – 08/2017*
Wrote code in Python, C++, and SQL to support drone flight planning, evaluation, and simulation

Student Researcher, Reconfigurable Antenna Lab (with Prof. Sean Hum) *05/2016 –08/2016*
Project: C++ simulation tool for periodic electromagnetic scatterers

Student Researcher, Lab for Advanced Power Conversion (with Prof. Peter Lehn) *05/2015 – 08/2015*
Project: Wireless energy harvester for smart-grid monitoring applications

Student Researcher, Nanomaterials Lab (with Prof. Ho Ghim Wei) *05/2014 – 07/2014*
Project: Copper-based nanostructures for photocatalytic hydrogen production

Additional Skills

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, 1st Class Honours (practical only)
Grade 10 comprehensive certificate in Piano Performance, 1st Class Honours
Grade 10 comprehensive certificate in Vocal Performance, 1st Class Honours