

Vincent Leon

PHD CANDIDATE IN INDUSTRIAL ENGINEERING · UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

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Research Interests

My research spans **game theory**, **online learning**, **social networks**, and **optimal control**. My doctoral dissertation focuses on equilibrium analysis of dynamic games, learning algorithm design for multi-agent systems, mechanism design, and online control in networks, drawing on game theory, optimization, multi-armed bandits and reinforcement learning, with a focus on strategic resource allocation. I am also broadly interested in distributed systems, networked control, inverse game theory, robust and resilient algorithm design, and applications in cyber security, data privacy, traffic routing, and wireless communication.

Education

University of Illinois Urbana-Champaign

Urbana, IL, USA

PHD IN INDUSTRIAL ENGINEERING (IN PROGRESS)

expected May 2026

- Advisor: Assoc. Prof. S. Rasoul Etesami
- Dissertation Topic: Online learning in dynamic games and social networks
- Prelim Exam Committee: Assoc. Prof. S. Rasoul Etesami (Chair), Prof. Carolyn L. Beck, Assoc. Prof. Subhonmesh Bose, Prof. Rakesh Nagi, Prof. Jeff S. Shamma
- GPA: 3.96/4.00

The University of Hong Kong

Hong Kong

BENG IN CIVIL ENGINEERING (FIRST CLASS HONOURS)

2016

- GPA: 3.76/4.30

University of Illinois Urbana-Champaign

Urbana, IL, USA

ENGINEERING NON-DEGREE EXCHANGE PROGRAM

Aug 2014 – May 2015

- GPA: 3.95/4.00

Professional Experience

Singapore University of Technology and Design

Singapore

VISITING SCHOLAR

Aug 2024–Jan 2025

- Supervisor: Asst. Prof. Antonios Varvitsiotis
- Research: Polynomial optimization techniques for concave, monotone, and extensive-form games

Ove Arup & Partners HK Ltd.

Hong Kong

ASSISTANT ENGINEER

Aug 2016–Aug 2019

Publications

JOURNAL ARTICLES

- V. Leon** and S. R. Etesami, “Online learning in budget-constrained dynamic Colonel Blotto games,” *Dynamic Games and Applications*, vol. 14, pp. 865–887, 2024. doi: 10.1007/s13235-023-00518-7.
- V. Leon**, S. R. Etesami, and R. Nagi, “Limited-trust in diffusion of competing alternatives over social networks,” *IEEE Transactions on Network Science and Engineering*, vol. 11, no. 1, pp. 1320–1336, 2024, doi: 10.1109/TNSE.2023.3322132.
- S. R. Etesami, N. Kiyavash, **V. Leon**, and H. V. Poor, “Optimal adversarial policies in the multiplicative learning system with a malicious expert,” *IEEE Transactions on Information Forensics and Security*, vol. 16, pp. 2276–2287, 2021, doi: 10.1109/TIFS.2021.3052360.

CONFERENCE ARTICLES

- V. Leon**, I. Sakos, R. Sim, and A. Varvitsiotis, “Certifying concavity and monotonicity in games via sum-of-squares hierarchies”, accepted to *NeurIPS 2025*, San Diego, CA, USA & Mexico City, Mexico, 2025.
- V. Leon** and S. R. Etesami, “Online reinforcement learning in Markov decision process using linear programming,” in *2023 62nd IEEE Conference on Decision and Control (CDC)*, Singapore, 2023, pp. 1973–1978, doi: 10.1109/CDC49753.2023.10383839.
- V. Leon**, S. R. Etesami, and R. Nagi, “Diffusion of innovation under limited-trust equilibrium,” in *2022 IEEE 61st Conference on Decision and Control (CDC)*, Cancun, Mexico, 2022, pp. 3145–3150, doi: 10.1109/CDC51059.2022.9992669.
- V. Leon** and S. R. Etesami, “Bandit learning for dynamic Colonel Blotto game with a budget constraint,” in *2021 60th IEEE Conference on Decision and Control (CDC)*, Austin, TX, USA, 2021, pp. 3818–3823, doi: 10.1109/CDC45484.2021.9683087.

PREPRINTS

- V. Leon** and S. R. Etesami, “Online learning for dynamic Vickrey-Clarke-Groves mechanism in sequential auctions under unknown environments”, *arXiv Preprint (submitted to Automatica)*, arXiv:2506.19038, 2025.

IN PREPARATION

- V. Leon** and S. R. Etesami, “Optimal centralized control and online learning for contagion prevention in financial networks”, *In Preparation*.

Presentations

INVITED TALKS

- December 2023. Limited-trust in diffusion of competing alternatives over social networks. ESD Research Seminar, Singapore University of Technology and Design, Singapore.

CONTRIBUTED PRESENTATIONS

- October 2025. Online learning for dynamic Vickrey-Clarke-Groves mechanism in sequential auctions under unknown environments (oral presentation, accepted). The 2025 INFORMS Annual Meeting (Job Market Showcase Track), Atlanta, GA, USA.
- May 2025. Online learning for dynamic Vickrey-Clarke-Groves mechanism in sequential auctions under unknown environments (oral and poster presentations). The 2nd Annual ISE Student Conference, University of Illinois Urbana-Champaign, Urbana, IL, USA.
- April 2025. Online learning for dynamic Vickrey-Clarke-Groves mechanism in sequential auctions under unknown environments (poster presentation). The 11th Midwest Workshop on Control and Game Theory, University of Illinois Urbana-Champaign, Urbana, IL, USA.
- April 2024. Online learning in budget-constrained dynamic Colonel Blotto games (oral and poster presentations). The Inaugural ISE Student Conference, University of Illinois Urbana-Champaign, Urbana, IL, USA.
- December 2023. Online reinforcement learning in Markov decision process using linear programming (oral presentation). IEEE CDC 2023, Singapore.
- December 2022. Diffusion of innovation under limited-trust equilibrium (oral presentation). IEEE CDC 2022, Cancún, México.
- October 2022. Online learning in budget-constrained dynamic Colonel Blotto games (poster presentation). C3.ai DTI Workshop on Data, Learning, and Markets, University of Illinois Urbana-Champaign, Urbana, IL, USA.
- December 2021. Bandit learning for dynamic Colonel Blotto game with a budget constraint (oral presentation). IEEE CDC 2021 (virtual), Austin, TX, USA.

Teaching Experience

University of Illinois Urbana-Champaign

GRADUATE TEACHING ASSISTANT

- IE 521 - Convex Optimization
- IE 310 - Deterministic Models in Optimization, a.k.a. Intro to Operations Research
- IE 529 - Statistics of Big Data and Clustering
- IE 511 - Integer Programming
- SE 320 - Control Systems (Lab instructor & TA)
- SE 100 - Introduction to ISE

Fall 2025
Spring 2025, Spring 2022
Spring 2024
Spring 2023
Fall 2022, Fall 2021
Fall 2020

Awards and Scholarships

- 2024 **The Inaugural ISE Student Conference Outstanding Poster Award**, ISE, UIUC
- 2023 **IEEE Control Systems Society (CSS) Student Travel & Workshop Support**, IEEE CSS
ISE Conference Funding and Conference Presentation Award, ISE, UIUC
- 2016 **Best Final Year Project Award**, American Society of Civil Engineers (Hong Kong Section)
Chu Yuk Baw Prize in Civil Engineering, The University of Hong Kong
Dean's Honours List, The University of Hong Kong
- 2015 **Hui Yin Hing Scholarship**, The University of Hong Kong
Lee Shau Kee Scholarship, The University of Hong Kong
- 2013, 2014 **Dean's Honours List**, The University of Hong Kong

Professional Services & Extra-curricular Activities

JOURNAL & CONFERENCE REVIEWER

Journal IEEE Transactions on Automatic Control
IEEE Transactions on Control of Network Systems
Knowledge and Information Systems

Conference IEEE CDC (2023, 2024, 2025)
NeurIPS (2025-subreviewer)

EXTRA-CURRICULAR ACTIVITIES

- Secretary, Dancing Illini, University of Illinois Urbana-Champaign

2025–present

Relevant Coursework

Decision and Control: Control system theory and design (ECE 515), MDPs and reinforcement learning (ECE 586)

Optimization: Approximation algorithms (CS 583), combinatorial optimization (IE 519), game theory (IE 598), linear & integer programming (IE 411 & 511), optimization under uncertainty (IE 598)

Learning theory & AI: Machine learning (ECE 449), statistical learning theory (ECE 543)

Languages & Skills

Programming Python and LaTeX: proficient
Julia, MATLAB, and Java: intermediate

Languages Chinese (Mandarin): native proficiency
Chinese (Cantonese): native-like proficiency
English: full professional proficiency (C1–C2)
Spanish: professional working proficiency (B2–C1)
French: elementary proficiency (A2–B1)