

# AMIR AJORLOU

Massachusetts Institute of Technology  
Laboratory for Information and Decision Systems  
Institute for Data, Systems, and Society  
32-D558, 77 Massachusetts Avenue,  
Cambridge, MA 02139

Phone: (215) 919-3234  
Email: [ajorlou@mit.edu](mailto:ajorlou@mit.edu)  
Homepage: <http://www.mit.edu/~ajorlou>

## EDUCATION & ACADEMIC APPOINTMENTS

**Massachusetts Institute of Technology**, Cambridge, MA, USA  
Research Scientist, Laboratory for Information & Decision Systems (LIDS), July 2017-present.

**Massachusetts Institute of Technology**, Cambridge, MA, USA  
Postdoctoral Fellow, Laboratory for Information & Decision Systems (LIDS), Sep. 2014- June 2017.

**University of Pennsylvania**, Philadelphia, PA, USA  
Postdoctoral Research Associate, Sep. 2013-2014.

**Concordia University**, Montreal, Quebec, Canada  
Ph.D. in Electrical Engineering (focus: Control Systems), 2008-2013.

**Sharif University of Technology**, Tehran, Iran  
B.Sc. in Electrical Engineering, 1999-2004.

## RESEARCH INTERESTS

- decision making under uncertainty
- distributed learning and sampling
- games on networks
- Bayesian persuasion
- infinite-dimensional optimization
- network dynamics and control

## SELECTED AWARDS AND HONORS

**Governor General of Canada Academic Gold Medal**, 2014.<sup>1</sup>

**NSERC Postdoctoral Fellowship**, 2014 (3 awarded across Canada in Control Systems).

**Concordia University Doctoral Prize in Engineering and Computer Science**, 2014.<sup>2</sup>

**David J. Azrieli Graduate Fellowship Award**, 2011- 2012.

**Canadian National Award in Transportation Studies**, 2010- 2012.

**Concordia University Graduate Fellowship Award**, 2009- 2011.

**Gold Medalist** of the 40th **International Mathematical Olympiad**, Romania, 1999.

**Gold Medalist** of the 39th **International Mathematical Olympiad**, Taiwan, 1998 (ranked 1st in the world).

**Gold Medalist** of the 15th and 16th **National Mathematical Olympiad**, Iran, 1998 and 1999.

---

<sup>1</sup>The highest academic recognition for a graduate student at Canadian universities.

<sup>2</sup>Awarded annually, when merited, to the most deserving graduate of the Doctorate in Philosophy programs in the Faculty of Engineering and Computer Science.

## PUBLICATIONS

### CITATION RECORD (BASED ON GOOGLE SCHOLAR DATABASE, DECEMBER 2019):

- Total citations: 610, h-index: 11.

### SUBMITTED OR WORKING PAPERS

1. **A. Ajourlou** and A. Jadbabaie, "Sales-based rebate design," *Management Science*, under review.
2. C. Hsu, **A. Ajourlou**, A. Jadbabaie, "A theory of misinformation spread on social networks," working paper.
3. **A. Ajourlou**, A. Jadbabaie, and M. Dahleh, "Aggregate learning from the history in networks," working paper.

### JOURNAL PAPERS

1. **A. Ajourlou** and A. Jadbabaie, "Local optimality of almost piecewise-linear quantizers for Witsenhausen's problem," *IEEE Transactions on Automatic Control*, 2019 (conditionally accepted).
2. **A. Ajourlou**, A. Jadbabaie, and A. Kakhbod, "Dynamic pricing in social networks: The word of mouth effect," *Management Science*, vol. 64, pp. 971-979, 2018.
3. A. Fazeli, **A. Ajourlou**, and A. Jadbabaie, "Competitive diffusion in social networks: quality or seeding?," *IEEE Transactions on Control of Network Systems*, vol. 2, pp. 665- 675, 2017.
4. M. M. Asadi, **A. Ajourlou**, and A. G. Aghdam, "Distributed control of a network of single integrators with limited angular fields of view," *Automatica*, vol. 63, pp. 187-197, 2016.
5. **A. Ajourlou**, M. M. Asadi, A. G. Aghdam, and S. Blouin, "Distributed consensus control of unicycle agents in the presence of external disturbances," *Systems & Control Letters*, vol. 82, pp. 86-90, 2015.
6. M. A. Rahimian, **A. Ajourlou**, and A. G. Aghdam, "Digraphs with distinguishable dynamics under the multi-agent agreement protocol," *Asian Journal of Control*, vol. 16, no. 5, pp. 1300-1311, 2014 (invited paper).
7. **A. Ajourlou** and A. G. Aghdam, "A bounded distributed connectivity preserving aggregation strategy with collision avoidance property," *Systems & Control Letters*, vol. 62, no. 11, pp. 1098-1104, 2013.
8. **A. Ajourlou** and A. G. Aghdam, "Connectivity preservation in nonholonomic multi-agent systems: A bounded distributed control strategy," *IEEE Transactions on Automatic Control*, vol. 58, no. 9, pp. 2366-2371, 2013.
9. **A. Ajourlou**, K. Moezzi, A. G. Aghdam, and S. G. Nersesov, "Two-stage time-optimal formation reconfiguration strategy," *Systems & Control Letters*, vol. 62, no. 6, pp. 496-502, 2013.
10. **A. Ajourlou**, K. Moezzi, A. G. Aghdam, S. Tafazoli, and S. G. Nersesov, "Two-stage energy-optimal formation reconfiguration strategy," *Automatica*, vol. 48, no. 10, pp. 2587-2591, 2012.
11. S. Jafari, **A. Ajourlou**, and A. G. Aghdam, "Leader localization in multi-agent systems subject to failure: a graph-theoretic approach," *Automatica*, vol. 47, no. 8, pp. 1744-1750, 2011.
12. **A. Ajourlou**, A. Momeni, and A. G. Aghdam, "Sufficient conditions for the convergence of a class of nonlinear distributed consensus algorithms," *Automatica*, vol. 47, no. 3, pp. 625-629, 2011.
13. **A. Ajourlou**, A. Momeni, and A. G. Aghdam, "A class of bounded distributed control strategies for connectivity preservation in multi-agent systems," *IEEE Transactions on Automatic Control*, vol. 55, no. 12, pp. 2828-2833, 2010.

## PEER-REVIEWED CONFERENCE PAPERS

1. **A. Ajorlou** and A. Jadbabaie, "A class of near-optimal local minima for Witsenhausen's problem," in *Proceedings of the 58th IEEE Conference on Decision and Control*, 2019.
2. **A. Ajorlou**, A. Jadbabaie, and M. Dahleh, "Dynamic public learning in networks of strategic agents: the role of inter/intra-community ties," in *Proceedings of the 56th IEEE Conference on Decision and Control*, 2017 (invited paper).
3. **A. Ajorlou** and A. Jadbabaie, "A game theoretic approach to promotion design in two-sided platforms," in *Proceedings of the 55th Annual Allerton Conference on Communication, Control, and Computing*, 2017 (invited paper).
4. **A. Ajorlou** and A. Jadbabaie, "Slopy quantizers are locally optimal for Witsenhausen's counterexample," in *Proceedings of the 55th IEEE Conference on Decision and Control*, 2016, pp. 3566-3571 (invited paper).
5. **A. Ajorlou** and A. Jadbabaie, "Equilibrium analysis for a leader-follower game with noisy observations: A pace forward in Witsenhausens counterexample conjecture," in *Proceedings of the 54th Annual Allerton Conference on Communication, Control, and Computing*, 2016 (invited paper).
6. A. Fazeli, **A. Ajorlou**, and A. Jadbabaie, "Duopoly budget allocation in social networks: a Nash analysis approach," in *Proceedings of the 54th IEEE Conference on Decision and Control*, 2015, pp. 2901-2906 (invited paper).
7. **A. Ajorlou**, A. Awasthi, and A. G. Aghdam, "Distributed urban traffic control based on locally observable cell occupancies," in *Proceedings of American Control Conference*, 2015, pp. 1035-1040.
8. A. Fazeli, **A. Ajorlou**, and A. Jadbabaie, "Optimal budget allocation in social networks: quality or seeding?," in *Proceedings of the 53rd IEEE Conference on Decision and Control*, 2014, pp. 4455-4460 (invited paper).
9. **A. Ajorlou**, A. Jadbabaie, and A. Kakhbod, "Strategic information diffusion: spread vs. exploit," in *Proceedings of the joint Workshop on Pricing and Incentives in Networks and Systems (W-PIN+NetEcon in conjunction with ACM Sigmetrics)*, 2014.
10. M. M. Asadi, **A. Ajorlou**, A. G. Aghdam, and S. Blouin, "Global network connectivity assessment via local data exchange for underwater acoustic sensor networks," in *Proceedings of ACM International Conference on Reliable and Convergent Systems*, 2013, pp. 277-282 (invited paper).
11. **A. Ajorlou**, M. M. Asadi, A. G. Aghdam, and S. Blouin, "A consensus control strategy for unicycles in the presence of disturbances," in *Proceedings of American Control Conference*, 2013, pp. 4039-4043.
12. M. A. Rahimian, **A. Ajorlou**, R. Tutunov, and A. G. Aghdam, "Identifiability of links and nodes in multi-agent systems under the agreement protocol," in *Proceedings of American Control Conference*, 2013, pp. 6853-6858.
13. M. M. Asadi, **A. Ajorlou**, and A. G. Aghdam, "Distributed control of multi-agent systems with rotating field of view," in *Proceedings of American Control Conference*, 2013, pp. 2044-2049.
14. **A. Ajorlou** and A. G. Aghdam, "A bounded connectivity preserving aggregation strategy with collision avoidance property for single-integrator agents," in *Proceedings of the 51st IEEE Conference on Decision and Control*, 2012, pp. 4003-4008.
15. M. A. Rahimian, **A. Ajorlou**, and A. G. Aghdam, "Detectability of multiple link failures in multi-agent systems under the agreement protocol," in *Proceedings of the 51st IEEE Conference on Decision and Control*, 2012, pp. 118-123.
16. M. Tousi, **A. Ajorlou**, H. Mahboubi, and A. G. Aghdam, "Decentralized pole-placement using generalized sampled-data hold functions," in *Proceedings of the 51st IEEE Conference on Decision and Control*, 2012, pp. 6921-6925.

17. **A. Ajorlou**, A. G. Aghdam, and A. Jadbabaie, "A connectivity preserving containment control strategy for unicycles with static leaders," in *Proceedings of American Control Conference*, 2012, pp. 4186-4191.
18. **A. Ajorlou** and A. G. Aghdam, "Convergence analysis for a class of bounded distributed connectivity preserving consensus algorithms for unicycles," in *Proceedings of American Control Conference*, 2012, pp. 1585-1590.
19. M. A. Rahimian, **A. Ajorlou**, and A. G. Aghdam, "Characterization of link failures in multi-agent systems under the agreement protocol," in *Proceedings of American Control Conference*, 2012, pp. 5258-5263.
20. M. M. Asadi, **A. Ajorlou**, and A. G. Aghdam, "Cooperative control of multi-agent systems with limited angular field of view," in *Proceedings of American Control Conference*, 2012, pp. 2388-2393.
21. F. Salehisadaghiani, **A. Ajorlou**, and A. G. Aghdam, "Distributed connectivity preservation of a team of single integrator agents subject to measurement error," in *Proceedings of IEEE Multiconference on Systems & Control*, 2011, pp. 626-631.
22. **A. Ajorlou**, A. Momeni, and A. G. Aghdam, "A connectivity preserving containment control strategy for a network of single integrator agents," in *Proceedings of American Control Conference*, 2011, pp. 499-501.
23. **A. Ajorlou**, A. Momeni, and A. G. Aghdam, "Relaxed convergence conditions for multi-agent systems under a class of consensus algorithms," in *Proceedings of American Control Conference*, 2011, pp. 2795-2800.
24. S. Jafari, **A. Ajorlou**, and A. G. Aghdam, "Leader selection in multi-agent systems subject to partial failure," in *Proceedings of American Control Conference*, 2011, pp. 5330-5335.
25. **A. Ajorlou** and A. G. Aghdam, "A class of bounded distributed controllers for connectivity preservation of unicycles," in *Proceedings of the 49th IEEE Conference on Decision and Control*, 2010, pp. 3072-3077.
26. **A. Ajorlou**, K. Moezzi, A. G. Aghdam, and S. G. Nersesov, "Two-stage time-optimal formation reconfiguration strategy under velocity and acceleration constraints," in *Proceedings of the 49th IEEE Conference on Decision and Control*, 2010, pp. 7455-7460.
27. S. Jafari, **A. Ajorlou**, and A. G. Aghdam, "On the structural controllability of multi-agent systems subject to failure: A graph-theoretic approach," in *Proceedings of the 49th IEEE Conference on Decision and Control*, 2010, pp. 4564-4570.
28. S. Jafari, **A. Ajorlou**, and A. G. Aghdam, "Distributed control of formation flying spacecraft using deterministic communication schedulers," in *Proceedings of the 49th IEEE Conference on Decision and Control*, 2010, pp. 3084-3090.
29. **A. Ajorlou**, A. Momeni, and A. G. Aghdam, "Convergence analysis for a class of nonlinear consensus algorithms," in *Proceedings of American Control Conference*, 2010, pp. 6318-6323.
30. **A. Ajorlou**, A. Momeni, and A. G. Aghdam, "Connectivity preservation in a network of single integrator agents," in *Proceedings of the 48th IEEE Conference on Decision and Control*, 2009, pp. 7061-7067.
31. **A. Ajorlou**, K. Moezzi, A. G. Aghdam, and S. Tafazoli, "Energy and time efficient formation reconfiguration strategies," in *Proceedings of the 48th IEEE Conference on Decision and Control*, 2009, pp. 3081-3086.
32. S. Ajorlou and **A. Ajorlou**, "A fuzzy-based design procedure for a single-stage sampling plan," in *Proceedings of the IEEE International Conference on Fuzzy Systems*, 2009, pp. 1869-1874.

## TEACHING EXPERIENCE

- **Instructor**, Introduction to Network Models, **Massachusetts Institute of Technology**, Fall 2018.
- **Co-Instructor, Co-Developer**, Introduction to Network Models, **Massachusetts Institute of Technology**, Fall 2017.
- **Instructor**, Nonlinear Optimization, **Massachusetts Institute of Technology**, Spring 2017.
- **Teaching assistant**, Programming Methodology, **Concordia University**, Winter 2009.
- **Teaching assistant**, Elements of Control, **North Carolina State University**, Summer 2008.
- **Teaching assistant**, Digital Signal Processing, **North Carolina State University**, Spring 2008.
- **Teaching assistant**, Digital Control Systems, **North Carolina State University**, Spring 2008.
- **Teaching** Linear Algebra, Graph Theory, Number Theory and Euclidean Geometry in **preparation courses for Iranian Mathematical Olympiad teams**, participating in the International Mathematical Olympiads, 1999-2003.

## RECENT TALKS

### A Game Theoretic Approach to Incentive Design for Crowd-based Markets

- Revenue Management & Pricing Conference, Stanford Graduate School of Business, June 2019.
- École Polytechnique de Montréal, September 2018.
- 4th Annual NSF Conference on Network Science in Economics, Vanderbilt University, April 2018.
- Cornell University, March 2018.
- Arizona State University, February 2018.
- 2nd Symposium on the Control of Network Systems (SCONES), Boston University, October 2017.
- INFORMS Annual Meeting, Houston, TX, October 2017.

### Decision Making Under Uncertainty in Networks of Strategic Agents

- University of Michigan Ann Arbor, March 2017.
- University of California San Diego, March 2017.
- University of Illinois Urbana-Champaign, March 2017.
- Iowa State University, March 2017.
- Indiana University Bloomington, April 2017.

### Dynamic Pricing in Social Networks: The Word of Mouth Effect

- Third Annual Young Researchers Workshop on Data-Driven Decision Making, School of Operations Research and Information Engineering, Cornell University, 2016.
- Revenue Management and Pricing Conference, NYU Stern School of Business, 2016.
- LIDS Student Conference, Laboratory for Information and Decision Systems (LIDS), MIT, 2016.
- INFORMS Annual Meeting, Philadelphia, PA, 2015.
- EC'15 Workshop on Social and Information Networks, Portland, OR, 2015.

### Local Optimality of Almost Piecewise-Linear Quantizers for Witsenhausen's Problem

- 55th IEEE Conference on Decision and Control, Las Vegas, NV, 2016.
- 54th Annual Allerton Conference on Communication, Control, and Computing, University of Illinois at Urbana-Champaign, 2016.

### Competitive Diffusion in Social Networks: Quality or Seeding?

- 54th IEEE Conference on Decision and Control, Osaka, Japan, 2015.
- 53rd IEEE Conference on Decision and Control, Los Angeles, CA, 2014.

## LEADERSHIP AND SERVICES

- **Associate Editor** for the Conference Editorial Board of IEEE Control Systems Society, 2017-present.
- **Technical Program Committee Member** of 9th IEEE International Workshop on Network Science for Communication Networks (NetSciCom)(2017), 10th IEEE International Conference on System of Systems Engineering (2015), IEEE International Conference on Wireless for Space and Extreme Environments (WiSEE) (2013), 8th IEEE International Conference on System of Systems Engineering (2013), 2012 Japan-Egypt Conference on Electronics, Communications and Computers.
- **Chair** and **Organizer** of the "Social and Economic Networks" invited session at the IEEE Conference on Decision and Control, 2014-2018.
- **Chair** of the session "Revenue Management and Pricing in Social Networks", INFORMS, 2015.
- **Chair** of Control Systems Chapter of IEEE Montreal Section, 2011.
- **Co-Chair** of the 3rd, 4th, and 5th Semi-Annual Workshops on Control Systems, Concordia University (2010-2011) and the Joint Workshop on Control and Communication Systems, McGill University (2010).
- **Reviewer** of IEEE Transactions on Automatic Control, IEEE Transactions on Control of Network Systems, IEEE Transactions on Network Science and Engineering, IEEE Transactions on Control Systems Technology, IEEE Transactions on Systems, Man and Cybernetics, IEEE Systems Journal, Automatica, and Systems & Control Letters, Management Science, Operations Research, Networks, and many conferences on decision and control.

## ADVISING @ MIT

### External Evaluator:

- Elaheh Fata, "New problems in revenue management: theory and applications", Fall 2019.

### Capstone Project Supervisor:

- Mark Mockett, "Modeling delay propagation in US airspace", Spring 2019.
- Anagh Tiwary, "An analysis of Brexit using global network modeling", Spring 2019.

## REFERENCES

### Professor Ali Jadbabaie

JR East Professor of Engineering  
Associate Director  
Institute for Data, Systems, and Society  
Director, Socio-technical Systems Research Center  
Massachusetts Institute of Technology  
Email: [jadbabai@mit.edu](mailto:jadbabai@mit.edu)  
Phone: (617) 253-7339

### Professor Munther Dahleh

William A. Coolidge Professor  
Director, Institute for Data, Systems, and Society  
Massachusetts Institute of Technology  
Email: [dahleh@mit.edu](mailto:dahleh@mit.edu)  
Phone: (617) 258-8773

### Professor Amir G. Aghdam

Professor, Electrical and Computer Engineering  
Concordia University  
2014-2015 President, IEEE Canada  
Conference Editorial Board Chair  
IEEE Control Systems Society  
Email: [aghdam@ieee.org](mailto:aghdam@ieee.org)  
Phone: (514) 848-2424 Ext. 4137

### Professor Alireza Tahbaz-Salehi

Associate Professor of Managerial Economics and  
Decision Sciences, Kellogg School of Management  
Northwestern University  
Email: [alirezat@kellogg.northwestern.edu](mailto:alirezat@kellogg.northwestern.edu)  
Phone: (847) 491-2359