Curriculum Vitæ
Victor Amelkin

✉ vctr@seas.upenn.edu, ☎ +1 (805) 284-7518
🌐 https://victoramelkin.com

The *central theme of my research is network science*, with an emphasis on *supply chain, transportation, queueing, robotic, social, and financial networks*, studied from the perspectives of analysis, modeling, and control. My work is highly interdisciplinary, spanning applications and methods from computer science, engineering, operations research, microeconomics, and computational social science. The *specific research topics* I have worked on include

- ⋄ contagion and systemic risk in financial networks;
- ⋄ optimal scheduling of job arrival to queues;
- ⋄ optimization of robotic transportation networks and micro-supply chains;
- ⋄ strategic formation and resilience of supply chain networks;
- ⋄ competing opinion formation in social networks;
- ⋄ resilience of online social networks to external control;
- ⋄ collective performance of networked teams.

EDUCATION

09/2011–06/2018	PhD, Computer Science, University of California, Santa Barbara, CA, US *Thesis:* "Analysis, Modeling, and Control of Dynamic Processes in Networks" *Research Advisor:* Ambuj Singh *Doctoral Committee:* Ambuj Singh, Francesco Bullo, John Gilbert, Xifeng Yan
09/2006–06/2008	MSc, Applied Mathematics and Computer Science, Tula State University, Tula, Russia *Thesis:* "Fejér Problem for Polynomials on a Sphere" *Research Advisor:* Valeriy Ivanov
09/2002–06/2006	BSc, Applied Mathematics and Computer Science, Tula State University, Tula, Russia

EMPLOYMENT HISTORY

06/2020– ...	*Research Scientist*, Amazon Robotics, Amazon.com, North Reading, MA
07/2018–06/2020	*Warren Center Postdoctoral Fellow*, University of Pennsylvania, Philadelphia, PA
06/2013–06/2018	*Graduate Student Researcher*, University of California, Santa Barbara, CA
06/2016–09/2016	*Research Scientist Intern*, Amazon, Seattle, WA
07/2014–09/2014	*Research Intern*, Technicolor Research, Los Altos, CA
07/2012–09/2012	*Research Assistant*, Lawrence Berkeley National Lab, Berkeley, CA
10/2011–06/2012	*Graduate Student Researcher*, University of California, Santa Barbara, CA
10/2006–03/2010	*(Senior, 11/2008-03/2010) Software Engineer*, DevExpress

Select Skills

Network Science; Social, Economic, and Technological Networks; Algorithms; Operations Research; Data Mining; Machine Learning; Dynamical Systems and Control; Python; MATLAB; Java; C/C++; C#; JavaScript; .NET.

Publications in Refereed Journals and Conference Proceedings

[1] **Amelkin, V.**, Vohra R., *"Yield Uncertainty and Strategic Formation of Supply Chain Networks"* // *Networks*, Apr, 2023, [pdf], [doi].

[2] **Amelkin, V.**, Vohra, R., *"Strategic Formation and Reliability of Supply Chain Networks"* // In Proc. of *ACM Conf. on Economics and Computation (EC'20)*, July 13-17, 2020, pp. 77-78 (acceptance rate 20%), [pdf], [doi].

[3] **Amelkin, V.**, Singh, A.K., *"Fighting Opinion Control in Social Networks via Link Recommendation"* // In Proc. of *ACM Conference on Knowledge Discovery and Data Mining (KDD'19)*, August, 2019, (acceptance rate 14.2%), [pdf], [doi], [supplement], [poster], [slide], [video].

[4] **Amelkin, V.**, Bogdanov, P., Singh, A.K., *"A Distance Measure for the Analysis of Polar Opinion Dynamics in Social Networks (Extended Paper)"* // ACM Trans. on Knowledge Discovery from Data (TKDD), 13(4), 2019, [pdf], [doi], [slides], [code].

[5] **Amelkin, V.**, Bullo, F., Singh, A.K., *"Polar Opinion Dynamics in Social Networks"* // IEEE Transactions on Automatic Control (TAC) (61) 11, 2017, [pdf], [doi], [poster], [slides].

[6] **Amelkin, V.**, Askarisichani, O., Kim Y.J., Malone T.W., Singh, A.K., *"Dynamics of Collective Performance in Collaboration Networks"* // PLOS ONE 13(10), 2018, [pdf], [doi], [data], [supplement].

[7] **Amelkin, V.**, Bogdanov, P., Singh, A.K., *"A Distance Measure for the Analysis of Polar Opinion Dynamics in Social Networks"* // In Proc. of *IEEE International Conference on Data Engineering (ICDE'17)*, May, 2017, (acceptance rate 17.7%), [pdf], [doi], [poster], [slides], [code].

Working Papers / In Submission

[8] **Amelkin, V.**, Venkatesh S., Vohra R., *"Contagion and Equilibria in Diversified Financial Networks"* // In Submission, 2023 [ssrn].

[9] **Amelkin, V.**, Vohra R., *"Strategic Formation and Reliability of Supply Chain Networks"* // In Preparation, 2023 [pdf], [arxiv].

Patents

At Amazon, 2 patent applications filed with the USPTO (Sep 2022 and May 2023) in the area of robotic network and micro supply chain optimization.

Theses, Technical Reports

[10] **Amelkin, V.**, *"Analysis, Modeling, and Control of Dynamic Processes in Networks"* // PhD Thesis, University of California, Santa Barbara, June, 2018, [pdf].

[11] **Amelkin, V.**, Ng, E.G., *"Parallel Communication Analysis for Sparse Cholesky Factorization Algorithms"* // Tech. Report. Lawrence Berkeley National Laboratory, Sep 2012, [pdf].

[12] **Amelkin, V.**, *"Fejér Problem for Polynomials on a Sphere"* // MSc Thesis, Tula State University, June, 2008.

Presentations, Workshops

[13] Invited presentation on resilience of economic networks at the Conference on Network Science and Economics, Aug 13-14, 2021, University of Chicago Booth School of Business, Chicago, IL.

[14] Invited presentation on contagion in financial networks at the Networks, Platforms, and Markets session of 2020 INFORMS Annual Meeting, Nov 8-11, 2020, National Harbor, MD.

[15] Invited presentation on strategic formation and resilience of supply chain networks at the Networks, Platforms, and Markets session of 2020 INFORMS Annual Meeting, Nov 8-11, 2020, National Harbor, MD.

[16] Invited presentation on supply chain network formation at the Conference on Network Science and Economics, ~~Mar 27-29, 2020~~ (postponed due to COVID-19), Chicago, IL.

[17] Invited talk on financial network contagion at Rutgers/DIMACS Theory of Computing Seminar, Feb 12, 2020, Rutgers University, New Brunswick, NJ.

[18] Poster presentation on opinion dynamics in complex social networks at UC Santa Barbara, Jan, 2018, [**poster**].

[19] Poster presentation on stock trader collaboration networks at UC Santa Barbara, Jan, 2018, [**poster**].

[20] Invited presentation on models for polar opinion dynamics at 32'nd Southern California Control Workshop, California Institute of Technology, April, 2017, [**slides**].

[21] Invited presentation on dynamics of collective performance in collaboration networks at XXXVI INSNA International Sunbelt Social Network Conference (Sunbelt), Newport Beach, CA, April, 2016, [**slides**].

Grant Proposals (Significant Contributions Only)

(**awarded**) Defense Threat Reduction Agency, HDTRA1-19-1-0017, "Inferring Network Structure and Flows Using Partial Observations", UCSB/ARL, A.K. Singh (PI), F. Bullo (Co-PI), $1.4M, 5/14/19-6/2/22

Awards

2011-2012	$8,000 Merit Fellowship from the Department of Computer Science at the UCSB
2011	$1,500 Opportunity Grant from the US Department of State
2008	Best paper at the Conf. on Current Problems in Mathematics, Mechanics, and Computer Science; Russia
2002	Tula Region Olympiad in Applied Mathematics for high-school students, 2'nd prize

Teaching

09/2015–09/2015   Instructor, UC Santa Barbara, US

   (grad.) *Linear Algebra and Graphs*, *Spectral Clustering* (Data and Network Science Bootcamp, Fall, 2015)

10/2012–09/2013   Teaching Assistant, UC Santa Barbara, US

   (ugrad.) *Foundations of Computer Science* (Summer, 2015; Spring-Summer, 2013)
   (ugrad.) *Object-Oriented Design and Implementation in C++* (Summer, 2013; Fall, 2012)
   (grad.) *Numerical Simulation (Numerical Methods for Solving ODEs and PDEs)* (Winter, 2013)

09/2007–06/2008   Teaching Assistant, Tula State University, Tula, Russia

   (ugrad.) *Assembly Language (TASM) Programming*

Professional Service

I have written more than 90 reviews for a number of computer science, engineering, economics, and sociology conferences, journals, and publishers, including

(CS) ITCS'21, JOCO'21, KDD'18'17'16'15, WWW'18'17, SDM'17'16, ICDM'16'13, WSDM'16, SIGMOD'14, TKDD'22'21'20, TKDE'21'20'18'17'15'14, TNSE'22'18'17, DMKD'19, Networks'20, AAAI'18'16, ECML-PKDD'14

(Engr.) TAC'23'22'21'20'19'18, Automatica'22'20'19'18, TCNS'21, CDC'21'19'17, ACC'21'19, ECC'19, Scientific Reports'18, L-CSS'17, Nature Scientific Reports'18

(Econ.) International Economic Review'19

(Soc.) Journal of Mathematical Sociology'21'20'19'18

(Books) Cambridge University Press'18

I serve on the Editorial Board of The Journal of Mathematical Sociology ('18-...).

I used to organize the weekly Computer Science Theory Seminar at the University of Pennsylvania ('18-'20), the first year—jointly with Jieming Mao.

References

Rakesh Vohra
George and Lydia Bravo Weiss University Professor
Director, Warren Center for Network & Data Sciences
Department of Economics
Department of Electrical and Systems Engineering
Department of Computer and Information Sciences
University of Pennsylvania
133 S. 36'th Street, Philadelphia, PA 19104
☎ +1 (215) 898-6777
✉ rvohra@seas.upenn.edu

Ambuj Singh (PhD Advisor)
Professor of Computer Science
Director, Network Science IGERT
Department of Computer Science
Department of Biomolecular Science and Engineering
University of California, Santa Barbara
3119 Harold Frank Hall, UCSB
Santa Barbara, CA 93106, US
☎ +1 (805) 893-3236
✉ ambuj@cs.ucsb.edu

Francesco Bullo
Professor of Mechanical Engineering
Department of Mechanical Engineering
Department of Electrical & Computer Engineering
Department of Computer Science
University of California, Santa Barbara
2325 Engineering II, UCSB
Santa Barbara, CA 93106, USA
☎ +1 (805) 893-5169
✉ bullo@engineering.ucsb.edu

Noah Friedkin
Professor of Sociology
Department of Sociology
Center for Control, Dyn. Systems & Computation
University of California, Santa Barbara
3316 Social Sciences and Media Studies, UCSB
Santa Barbara, CA 93106, USA
☎ +1 (805) 259-8389
✉ friedkin@soc.ucsb.edu