

Curriculum Vitae of Angela Fontan (last update: September 6, 2023)

📍 Division of Decision and Control Systems (EECS), KTH Royal Institute of Technology, 100 44 Stockholm, Sweden
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Employment

- Dec 2021 – present Postdoctoral Researcher at the Division of Decision and Control Systems (DCS)
School of Electrical Engineering and Computer Science (EECS)
KTH Royal Institute of Technology, Stockholm, Sweden
- Aug 2016 – Nov 2021 Ph.D. Student in Automatic Control at the Department of Electrical Engineering
Linköping University, Linköping, Sweden

Higher Education degrees

- 2016–2021 Ph.D. in Electrical Engineering with Specialization in Automatic Control
Linköping University, Linköping, Sweden
Title: Collective decision-making on networked systems in presence of antagonistic interactions
Supervisor: prof. Claudio Altafini
- 2016 Engineering Professional Practice Exam
University of Padova, Padova, Italy
- 2013–2016 M.Sc. in Automation Engineering, with the mark 110/110 cum laude
University of Padova, Padova, Italy
- 2010–2013 B.Sc. in Information Engineering, with the mark 102/110
University of Padova, Padova, Italy

Research merits

Research Interests Networked systems and nonlinear dynamics over networks; social networks; collective decision-making processes; Signed networks theory; Cyber-physical-human systems (CPHS); smart cities and Live-in Laboratories

List of publications

Journal papers

- [J6] **A. Fontan** and C. Altafini, “Pseudoinverses of Signed Laplacian Matrices,” *SIAM Journal on Matrix Analysis and Applications*, 44(2), pp. 622–647, 2023. [doi:10.1137/22M1493392](https://doi.org/10.1137/22M1493392)
- [J5] **A. Fontan**, L. Wang, Y. Hong, G. Shi, and C. Altafini, “Multiagent Consensus Over Time-Invariant and Time-Varying Signed Digraphs via Eventual Positivity,” *IEEE Transactions on Automatic Control*, 68(9), pp. 5429–5444, 2023. [doi:10.1109/TAC.2022.3225472](https://doi.org/10.1109/TAC.2022.3225472)
- [J4] **A. Fontan** and C. Altafini, “The Role of Frustration in Collective Decision-Making Dynamical Processes on Multiagent Signed Networks,” *IEEE Transactions on Automatic Control*, 67(10), pp. 5191–5206, 2022. [doi:10.1109/TAC.2021.3123222](https://doi.org/10.1109/TAC.2021.3123222)
- [J3] **A. Fontan** and C. Altafini, “A signed network perspective on the government formation process in parliamentary democracies,” *Scientific Reports*, 11(5134), 2021. [doi:10.1038/s41598-021-84147-3](https://doi.org/10.1038/s41598-021-84147-3)
- [J2] **A. Fontan**, G. Shi, X. Hu, and C. Altafini, “Interval Consensus for Multiagent Networks,” *IEEE Transactions on Automatic Control*, 65(5), pp. 1855–1869, 2020. [doi:10.1109/TAC.2019.2924131](https://doi.org/10.1109/TAC.2019.2924131)
- [J1] **A. Fontan** and C. Altafini, “Multiequilibria Analysis for a Class of Collective Decision-Making Networked Systems,” *IEEE Transactions on Control of Network Systems*, 5(4), pp. 1931–1940, 2018. [doi:10.1109/TCNS.2017.2774014](https://doi.org/10.1109/TCNS.2017.2774014)

Peer-reviewed Conference & Workshop papers (*with presentation)

- [C10] M. Farjadnia, **A. Fontan**, A. Russo, K. H. Johansson, M. Molinari, “What influences occupants’ behavior in residential buildings? An experimental study on window operation in the KTH Live-In Lab”, 7th IEEE Conference on Control Technology and Applications (CCTA), Bridgetown, Barbados, August 2023. ([arXiv:2307.08090](https://arxiv.org/abs/2307.08090))
- [C9] ***A. Fontan**, M. Farjadnia, J. Llewellyn, C. Katzeff, M. Molinari, V. Cvetkovic, and K. H. Johansson, “Social interactions for a sustainable lifestyle: The design of an experimental case study”, 22nd IFAC World Congress, Yokohama, Japan, July 2023
- [C8] ***A. Fontan**, V. Cvetkovic, K. H. Johansson, *On behavioral changes towards sustainability for connected individuals: a dynamic decision-making approach*, 4th IFAC Workshop on Cyber-Physical Human Systems, Houston, Texas, USA, December 2022
- [C7] L. Wang, **A. Fontan**, Y. Hong, G. Shi, and C. Altafini, *Multi-agent consensus over signed graphs with switching topology*,

20th European Control Conference (ECC), London, UK, July 2022

- [C6] ***A. Fontan** and C. Altafini, *On the properties of Laplacian pseudoinverses*, 60th IEEE Conference on Decision and Control, Austin, Texas, USA, December 2021
- [C5] ***A. Fontan** and C. Altafini, *Describing government formation processes through collective multiagent dynamics on signed networks* (extended abstract), 1st Virtual IFAC World Congress, July 2020
- [C4] ***A. Fontan** and C. Altafini, *Achieving a decision in antagonistic multiagent networks: frustration determines commitment strength*, 57th IEEE Conference on Decision and Control, Miami Beach, FL, USA, December 2018
- [C3] **A. Fontan** and C. Altafini, *Modeling wireless power transfer in a network of smart devices*, Proceedings of the 2018 European Control Conference, Cyprus, 2018
- [C2] ***A. Fontan** and C. Altafini, *Investigating mixed-sign equilibria for nonlinear collective decision-making systems*, 56th IEEE Conference on Decision and Control, Melbourne, Australia, December 2017
- [C1] **A. Fontan**, G. Shi, X. Hu and C. Altafini, *Interval Consensus: a novel class of constrained consensus problems for multiagent networks*, 56th IEEE Conference on Decision and Control, Melbourne, Australia, December 2017

Working Manuscripts

- [M1] **A. Fontan**, V. Cvetkovic, P. Herman, and K. H. Johansson, “Are choices between risky options predictable?”

Chapters in Books

- [B1] S. Hirche, A. Ames, T. Samad, **A. Fontan**, F. Lamnabhi-Lagarrigue, *Cyber-physical Human Systems*, Ch. 4.D, [Control for Societal-Scale Challenges: Roadmap 2030](#), Eds. A. M. Annaswamy, K. H. Johansson, G. Pappas, 2023

Other scientific activities (excluding professional service as reviewer and associate editor)

Chairmanship in conferences

- [C1] Oral Session I, 4th IFAC Workshop on Cyber-Physical Human Systems, Houston, Texas, USA, December 1-2, 2022

Invited Talks and Seminars

- [T7] [ELLIIT Focus Period](#), Linköping University, September 4, 2023
- [T6] [Autonomy Talks](#) at ETH Zürich, June 6, 2023
- [T5] Research Breakout session: Social AI at Digital Futures [Open Research Days](#), April 20-21, 2023
- [T4] Panel on unconscious bias, diversity, and inclusion at the [Skills and Perspectives for Early Career Development Workshop](#), 61st IEEE Conference on Decision and Control, Cancún, Mexico, December 5, 2022
- [T3] Research Break-out session: Smart Society at [Digitalize in Stockholm](#), October 19, 2022
- [T2] [EECS Summer Event](#), KTH Royal Institute of Technology, June 8, 2022
- [T1] Dive Deep Seminars with Digital Futures, March 3, 2022

Event Organization

- [2023 HiSS Workshop](#), KTH & Digital Futures, Stockholm, Sweden (hybrid), May 3-5, 2023
- [Stockholm Workshop on Emerging Topics in Systems and Control](#), KTH, Sweden, June 15-16, 2022
- [2022 IEEE CSS Workshop on Control for Societal-Scale Challenges](#), Stockholm, Sweden, June 17-18, 2022

Pedagogical merits

Teaching and Lab assistant

- Automatic Control, B.Sc. level, 2016–2020, LiU
- Automatic Control (Advanced Course), M.Sc. level, 2017–2020, LiU

Supervision at M.Sc. and Ph.D. level

- M.Sc., Jakob Jerrelind, LiU, 2020. External cooperation: Veoneer
- M.Sc., Markus Åstrand and Philip Öhrn, LiU, 2019. External cooperation: Saab Aeronautics
- M.Sc., Alaa Saeed and Mattias Mucherie, LiU, 2018. External cooperation: UAS Europe AB
- M.Sc., Dennis Åberg Skender, LiU, 2017. External cooperation: Toyota Material Handling Manufacturing Sweden AB
- Ph.D., Mahsa Farjadnia, KTH, 2023–ongoing. Cooperation: dr M. Molinari, prof K.H. Johansson

Honors and grants

- Travel scholarship of 25 000 SEK from the *Karl Engver's foundation* at KTH (registration number VT-2022-0066), 2022
- Media Coverage, [Forming a government – how long will it take?](#), Linköping University's homepage, September 6, 2021
- Outstanding Service as Reviewer of the IEEE Control Systems Letters, 2019
- Nomination for the pedagogical prize *Gyllene Skiftnyckeln* by the mechanical engineering students, LiU, 2020
- Nomination for the pedagogical prize *Gyllene Moroten* by the mechanical engineering students, LiU, 2017