Curriculum Vitae of Angela Fontan

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in angelafontan | G https://scholar.google.com//citations?user=zoh-5V8AAAAJ&hl=en | ℝᴳ Angela-Fontan

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Personal Information

Full Name. Date of birth. Citizenship

Angela Fontan. September 12, 1991. Italian

Home address and telephone number

I have dual residence, registered as follows:

- Kompanigatan 44, 587 58 Linköping, Sweden
- Skönviksvägen 283, 122 66 Enskede, Sweden

Phone number: +46 (0) 737239652

Workplace and e-mail address

Division of Decision and Control Systems (DCS)

School of Electrical Engineering and Computer Science (EECS)

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Employment

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

My Coordinates

- Personal webpage: https://angelafontan.github.io
- Google Scholar: https://scholar.google.com//citations?user=zoh-5V8AAAAJ&hl=en
- LinkedIn: angelafontan
- ResearchGate: Angela-Fontan

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

Contents of CV

Section 1: Pedagogical merits.   Section 2: Research merits.   Section 3: Management and collaboration.

1 Pedagogical merits

1.1 Teaching Experience

1.1.1 Teaching

The following teaching experience is from Linköping University; it includes distance and presence mode education (approximately 13 2h-lectures/course).

Teaching assistant,
- Automatic Control: 7 times (2016-2020, course codes: TSRT19, TSRT22, TSRT12)
- Automatic Control, Advanced Course: 4 times (2017-2020, course codes: TSRT06, TSRT09)

Lab assistant
- Automatic Control: 6 times (2016-2020, course codes incl.: TSRT19, TSRT22, TSRT12, TSRT91)
- Automatic Control, Advanced Course: 4 times (2016-2020, course codes incl.: TSRT06, TSRT09)

1.1.2 Supervision at M.Sc. level

- *Tracking of Pedestrians Using Multi-Target Tracking Methods with a Group Representation*, Jakob Jerrelind, Linköping University, 2020. External cooperation: Veoneer
- *Direct Lift Control of Fighter Aircraft*, Markus Åstrand and Philip Öhrn, Linköping University, 2019. External cooperation: Saab Aeronautics
- *Modelling and Identification of a RUAV*, Alaa Saeed and Mattias Mucherie, Linköping University, 2018. External cooperation: UAS Europe AB
- *Modelling of Test Bench for Road Load Simulation*, Dennis Åberg Skender, Linköping University, 2017. External cooperation: Toyota Material Handling Manufacturing Sweden AB

1.2 Proficiency as a teacher

1.2.1 Teaching Certificates

- Completion of the course *Becoming a teacher in Higher Education* (6 credits), advanced course in university education, Linköping University, Sweden, 2019

1.2.2 Honors

- Nomination for the pedagogical prize *Gyllene Skiftnyckeln* (translated: *The Golden Wrench*) by the mechanical engineering students at Linköping University, 2020
- Nomination for the pedagogical prize *Gyllene Moroten* (translated: *The Golden Carrot*) by the mechanical engineering students at Linköping University, 2017

Note: The Golden Carrot is a price in outstanding teaching skills awarded to employees at LiU (to my knowledge, only to examiners/professors). Each student association gets to chose one person to nominate (typically an examiner/professor); on some associations, the nomination of the association itself grants a special prize. For instance, the Association of Mechanical Engineering has a Golden Wrench that their nominee can win.

2 Research merits

2.1 Summary of Research Interests

Networked systems and nonlinear dynamics over networks, with applications to social networks and collective decision-making processes; Signed networks theory; Cyber-physical-human systems (CPHS) and the interactions between cyber-physical systems and humans in the context of smart cities with applications to Live-in Laboratories.

2.2 List of publications

In the following numbered lists of publications co-authors are specified in published order of names and the author's name is stated in bold. A symbol * marks selected publications from the Ph.D. dissertation.

2.2.1 Ph.D. Dissertation

A. Fontan, *Collective decision-making on networked systems in presence of antagonistic interactions*, Linköping Studies in Science and Technology. Dissertations, No. 2166, 2021

2.2.2 Journal papers

[J6] **A. Fontan** and C. Altafini, "Pseudoinverses of signed Laplacian matrices", accepted for publication in *SIAM Journal on Matrix Analysis and Applications (SIMAX)*, 2023

[J5] **A. Fontan**, L. Wang, Y. Hong, G. Shi, and C. Altafini, "Multi-agent consensus over time-invariant and time-varying signed digraphs via eventual positivity", accepted for publication in *IEEE Transactions on Automatic Control*, 2023. doi:10.1109/TAC.2022.3225472 (arXiv:2203.04215)

[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.

[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

[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

[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

2.2.3 Conference & Workshop papers (peer-reviewed)

[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", accepted at the 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 multi-agent networks*, 56th IEEE Conference on Decision and Control, Melbourne, Australia, December 2017

2.2.4 Chapters in Books

[B1] S. Hirche, A. Ames, T. Samad, **A. Fontan**, F. Lamnabhi-Lagarrigue, *Cyber-physical Human Systems*, Chapter 4.D of Control for Societal-Scale Challenges: Roadmap 2023, Eds. A. M. Annaswamy, K. H. Johansson, and G. J. Pappas, IEEE Control Systems Society Publication, 2023

2.2.5 Working Manuscripts

[M2] **A. Fontan**, V. Cvetkovic, P. Herman, and K. H. Johansson, "Are choices between risky options predictable?", 2023

[M1] 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", 2023, under review

2.3 Account for any funding received

2.3.1 Travel Scholarships

2.4 Active participation in national and international conferences

2.4.1 Chairmanship

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

2.4.2 Conference presentations

[P10] (PLANNED) *Social interactions for a sustainable lifestyle: The design of an experimental case study*, 22nd IFAC World Congress, Yokohama, Japan, July 2023

[P9] *On behavioral changes towards sustainability for connected individuals: a dynamic decision-making approach*, 4th IFAC Workshop on Cyber-Physical Human Systems, Houston, USA, December 1-2, 2022

[P8] *On behavioral changes for connected individuals: a networked dynamic decision-making approach*, Swedish Control Meeting ("Reglermöte"), Lund, Sweden, June 2022

[P7] *On the properties of Laplacian pseudoinverses*, 60th IEEE Conference on Decision and Control, Austin, Texas, USA, December 2021 (virtual conference)

[P6] *Describing government formation processes through collective multiagent dynamics on signed networks*, 1st Virtual IFAC World Congress, July 2020

[P5] *Signed parliamentary networks: how frustration affects the government formation in parliamentary democracies*, The 8th International Conference on Complex Networks and their Applications, Lisbon, Portugal, December 2019

[P4] *Decision Making in Presence of Frustration on Multiagent Antagonistic Networks*, SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, USA, May 2019

[P3] *Achieving a decision in antagonistic multiagent networks: frustration determines commitment strength*, 57th IEEE Conference on Decision and Control, Miami Beach, FL, USA, December 2018

[P2] *Collective decision-making in multiagent networks*, Swedish Control Meeting ("Reglermöte"), Stockholm, Sweden, June 2018

[P1] *Investigating mixed-sign equilibria for nonlinear collective decision-making systems*, 56th IEEE Conference on Decision and Control, Melbourne, Australia, December 2017

2.4.3 Posters

[P01] *The* HiSS LiL Social Case Study*: Social interactions and sustainable lifestyle*, Workshop on Data, Learning, and Markets, University of Illinois at Urbana-Champaign, Illinois, USA, October 10–12, 2022

2.4.4 Other Invited Talks and Seminars

[T4] I was invited to be part of the panel discussions 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] Together with Prof. Hedvig Kjellström, I presented my case study in the Humanizing the Sustainable Smart City Project during the *Research Break-out session 2: Smart Society* on October 19, 2022, at the event Digitalize in Stockholm

[T2] I was invited to give a short talk about my research work on networked decision-making in the context of sustainability of smart cities at the School of Electrical Engineering and Computer Science Summer Event on June 8, 2022, KTH Royal Institute of Technology in Stockholm Main Campus. [Link to event]

[T1] I was invited to give a (online) seminar about my Ph.D. research work at the *Dive Deep Seminars* with Digital Futures on March 3, 2022. [Link to event and recording]

2.5 Membership

- Member of the IEEE
- Member of the IEEE Control Systems Society
- Member of the IEEE Women in Engineering
- Member of the IEEE Technical Committee on Networks and Communication Systems

2.6 Professional Service

Legend: (n. of assignments/year)

2.6.1 Assignments as Reviewer

- Journal Reviewer (incl.): IEEE Transactions on Automatic Control (1/2018, 2/2019, 2/2020, 6/2021, 3/2022), IEEE Transactions on Control of Network Systems (1/2023, 3/2022), Automatica (3/2022, 3/2021, 1/2020, 2/2019), SIAM Journal on Control and Optimization (1/2022), IEEE Control Systems Letters (1/2019), Systems & Control Letters (1/2022)
- Conference Reviewer (incl.): IEEE Conference on Decision and Control (1/2017, 1/2019, 1/2021, 1/2022), European Control Conference (1/2022), American Control Conference (1/2019, 1/2020, 1/2021, 1/2023), IFAC World Congress, IFAC Conference on Networked Systems

2.6.2 Assignments as Associate Editor

- European Control Conference (3/2023)

2.6.3 Honors

- Certificate of Outstanding Service as Reviewer of the IEEE Control Systems Letters for the year 2019

2.7 Event Organization

- (planned) May 3-5, 2023
  Local organizer of the *2023 HiSS Workshop*
  KTH Royal Institute of Technology & Digital Futures
  Stockholm, Sweden
  Duties & Responsibilities (incl.): planning of sessions (together with project's CO-PIs), administrative and organizational (e.g., event planning, invitation of world class researchers)
- June 15-18, 2022
  - Local organizer of the *Stockholm Workshop on Emerging Topics in Systems and Control*
    KTH Royal Institute of Technology
    Stockholm, Sweden, June 15-16, 2022
  - Local organizer of the *2022 IEEE CSS Workshop on Control for Societal-Scale Challenges*
    Stockholm, Sweden, June 17-18, 2022

  Duties & Responsibilities (incl.): administrative and organizational (e.g., event planning, invitation of world class researchers), writing funding applications to the IEEE Control System Society (CSS) and to the National Science Foundation (NSF) – resulted successful

2.8 Media Coverage

- September 6, 2021
  The research on government formation processes in parliamentary democracies (see [J3]) was given attention on Linköping University's homepage (Forming a government – how long will it take?)

3 Management and collaboration

3.1 Collaborative Research Projects

- HiSS: Humanizing the Sustainable Smart City
  Application area: The smart cities of the future as complex cyber-physical-human systems (CPHS)
  Brief Description: Sponsored by Digital Futures, the HiSS project represents a highly multi-disciplinary research effort over three schools at KTH - the School of Electrical Engineering and Computer Science, the School of Industrial Engineering and Management, and the School of Architecture and the Built Environment - and comprises 6 case studies ([a] to [f]). The research team has the ambition to develop a new research area in urban development. Well-being in smart cities is the defined research area, focusing on interactions of human-machine-computers or CPHS, based on human decision making on an institutional, individual, and neurological abstraction level. The project aims at deepening the understanding of CPHS, and developing a framework for capturing interactions and dynamics in these systems and demonstrate applications in user case studies
  My Role: Postdoctoral Researcher and lead of case study [b] "The smart sustainable city as social networks"; ongoing collaborations with Case Study [a], and Case Study [c]
- (PLANNED) Collaboration with Dr. Patricia Eustachio Colombo, carried out with researchers at the London School of Hygiene and Tropical Medicine, University of London, UK, and the MRC Epidemiology Unit in Cambridge.
  Application area: Dietary choices and changes in consumption of food groups
  Brief description: Design and implement agent-based models to explore how different nation-wide policies change dietary choices in the UK population, and investigate the effect of social influence in dietary behavioral changes
  My Role: External collaborator with expertise in agent-based modeling

3.2 Visiting Scholar – External contacts and external activities

- October 20 - November 10, 2019
  Visiting Scholar at the Thematic semester on Network Dynamics and Resilience
  Department of Mathematical Sciences
  Politecnico di Torino, Italy
  Organizer of Thematic Semester: Prof. Giacomo Como