

# Lorenzo Zino | Curriculum Vitæ

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## Brief Summary

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I majored in Applied Mathematics at Politecnico di Torino in 2014 and received my PhD degree in Pure and Applied Mathematics from Università di Torino and Politecnico di Torino (joint program) in 2018, both cum laude. After having held research fellowships at New York University (US), Politecnico di Torino (Italy), and University of Groningen (the Netherlands), I joined the Department of Electronics and Telecommunications, Politecnico di Torino as an Assistant Professor, in 2022. My research interests include but are not limited to modeling, analysis, and control aspects of dynamical processes over networks (e.g., epidemics, opinion dynamics, diffusion of innovation), graph theory, applied probability and game theory. I like the modeling, the analysis, and the control aspects of dynamics over networks. Toward pursuing my research agenda, I built an network of international and interdisciplinary collaborations. My research production includes 36 journal papers, 14 conference papers, and 2 book chapters, peer-reviewed and published (or accepted for publication) in international journals, proceedings of international conferences, and by international editors, respectively. I participated to more than 10 international conferences, where I have organized 4 invited sessions, I chaired 1 session, and I gave presentations. Overall, I gave more than 30 presentations and seminars at national and international conferences, universities, and research centers. As a graduate teaching assistant, I did exercise sessions in classroom and theoretical lectures for a total of 10 Bachelor and Master courses at Politecnico di Torino and ESCP Europe. I co-supervised 6 master students and several bachelor students. Since 2019, I am in the program committee member of the International Conference on Complex Networks and their Applications. Since 2021, I am associate editor for the Journal of Computational Science.

## Current Position

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**Oct 2022 - ongoing: Junior Assistant Professor (RTDa)**

Department of Electronics and Telecommunications, Politecnico di Torino, Torino, Italy

## Previous Positions

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**Oct 2019 - Sep 2022: PostDoc Researcher**

Faculty of Science and Engineering, University of Groningen, Groningen, The Netherlands

**Jun 2019 - Jul 2019: PostDoc Assistant Research Scientist**

Department of Mechanical and Aerospace Engineering, Tandon School of Engineering, New York University, Brooklyn NY, US

**Jun 2018 - May 2019: Research Assistant**

Department of Mathematical Sciences "G. L. Lagrange", Politecnico di Torino, Torino, Italy

**Dec 2017 - Mar 2018: Assistant Research Scientist**

Department of Mechanical and Aerospace Engineering, Tandon School of Engineering, New York University, Brooklyn NY, US

**Nov 2014 - Oct 2018: Phd Student in Pure and Applied Mathematics**

Department of Mathematical Sciences "G. L. Lagrange", Politecnico di Torino, Torino, Italy

## Education

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### PhD in Pure and Applied Mathematics.....

Politecnico di Torino, Università di Torino — Torino, Italy: *final grade: cum laude*

Thesis: *Diffusion Processes on Networks* (Prof. F. Fagnani, Oct 9, 2018)

### Master in Mathematical Modeling (Ingegneria Matematica).....

Politecnico di Torino — Torino, Italy: *final grade: 110 L/110 (summa cum laude)*

Thesis: *An interacting agents model for the diffusion of new assets on large scale graphs* (Prof. F. Fagnani, Jul 24, 2014)

### Bachelor in Applied Mathematics (Matematica per le Scienze dell'Ingegneria).....

Politecnico di Torino — Torino, Italy: *final grade: 110/110*

Thesis: *Discrete Time Markov Chains and their Application in MCMC Methods* (Prof. P. Siri, Oct 11, 2012)

### High School Degree (Maturità Scientifica PNI).....

Liceo Scientifico "G. Galilei" - Borgomanero (NO), Italy: *final grade: 100/100 (Jul 2009)*

### Visiting Periods.....

Politecnico di Torino

*Visiting Scholar*

Dept. Mathematical Sciences

*Sep 2019, Nov 2019*

NYU, Tandon School of Engineering

*Visiting PhD student*

Dept. Mechanical and Aerospace Engineering

*Dec 2017-Mar 2018*

Lund University, LTH

*Visiting PhD student*

Department of Automatic Control

*Sep-Dec 2015*

### Conferences, Workshops, Schools, and Symposia.....

**41st Benelux Meeting on Systems and Control**

*Jul 5-7, 2022, Bruxelles, Belgium*

**Dutch Network Science Society Symposium 2022**

*May 19, 2022, Leiden, The Netherlands*

**NetSciX 2022: International School and Conference on Network Science**

*Feb 8-11, 2022, Porto, Portugal*

**IEEE 60th CDC Conference on Decision and Control**

*Dec 13-17, 2021, Austin TX, US (online)*

**29th Mediterranean Conference on Control and Automation**

*Jun 22-25, 2021, Bari, Italy (online)*

**IEEE CDC Workshop on Dynamics in Social and Economic Networks**

*Dec 12-13, 2020, Jeju Island, Korea (online)*

**NetSci 2020: Conference of the Network Science Society**

*Sep 17-25, 2020, Rome, Italy (online)*

**AUTOMATICA.IT 2020**

*Sep 9-11, 2020, Cagliari, Italy (online)*

**21st World Congress of International Federation of Automatic Control**

*Jul 13-17, 2020, Berlin, Germany (online)*

**IEEE-CSS Italy Workshop on Modeling and Control of the COVID-19 Outbreak**

*Apr 24, 2020, (online)*

**39th Benelux Meeting on Systems and Control**

*Mar 10-12, 2020, Elspeet, The Netherlands*

**8th International Conference on Complex Networks and their Applications**

*Dec 10-12, 2019, Lisbon, Portugal*

**Network Dynamics in the Social, Economic, and Financial Sciences**

*Nov 5-8, 2019, Turin, Italy*

**Workshop on Resilient Control of Infrastructure Networks**

*Sep 24-27, 2019, Turin, Italy*

**NetSci 2019: Conference of the Network Science Society**

*May 27-31, 2019, Burlington VT, US*

**13th SICC International Tutorial Workshop "Topics in Nonlinear Dynamics"**

*Oct 29-30, 2018, Turin, Italy*

**7th IFAC Workshop on Distributed Estimation and Control in Networked Systems**

*Aug 27-28, 2018, Groningen, The Netherlands*

**The 17th Annual European Control Conference**

*Jun 12-15, 2018, Limassol, Cyprus*

**6th International Conference on Complex Networks and their Applications**

*Nov 29 - Dec 1, 2017, Lyon, France*

**20th World Congress of International Federation of Automatic Control**

*Jul 10-14, 2017, Toulouse, France*

**First Italian Meeting on Probability and Mathematical Statistics**

*Jun 19-22, 2017, Turin, Italy*

**5th International Workshop on Complex Networks and their Applications**

*Nov 30 - Dec 2, 2016, Milan, Italy*

**22nd International Symposium on Mathematical Theory of Networks and Systems**

*Jul 12-15, 2016, Minneapolis (MN), US*

**Summer School on Information Processing for Large Networks**

*Jun 8-12, 2015, Les Diablerets, Switzerland, EPFL, ETH Zurich.*

## Teaching Experience

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**Politecnico di Torino**

*Graduate TA, 100 students, 30 h, with prof. F. Dabbene and C. Donati*

*Fall 2022*

Classroom exercise sessions for the course on *Convex optimization and engineering applications* for the Master degrees in Engineering (30 h, in English)

**Politecnico di Torino**

*Graduate TA, 100 students, 30 h, with prof. M. Ghirardi and C. Donati*

*Fall 2022*

Lectures for the course on *Laboratory of Industrial Automation* for the Bachelor in Technologies for the Manufacturing Industry (20 h, in Italian)

**Politecnico di Torino**

*Graduate TA, 200 students, 50 h, with prof. G. Como and prof. A. Cancedda*

*Fall 2018*

Classroom exercise sessions for two courses on *Mathematical Analysis II* for the Bachelors in ICT Engineering (30 h, in English) and Energy and Electric Engineering (20 h, in Italian) — Average student satisfaction: 96 %

**ESCP Europe**

*Graduate TA, 20 students, 6/9 h, English, with prof. F. Pellerey*

*Fall 2016–18, Spring 2018*

Classroom exercise sessions for the course on *Fundamentals of Mathematics 2* for the Bachelor in Management (for 3 years in fall, and one year in spring)

**Politecnico di Torino**

*Graduate TA, 200 students, 30 h, Italian, with prof. F. Fagnani*

*Spring 2017*

Lectures (10 h) and classroom exercise sessions (20 h) for the course on *Complex Analysis* for the Bachelor in Physical and Mathematical Engineering — Student satisfaction: 92 %

### Politecnico di Torino

Graduate TA, 40 students, 30 h, with prof. F. Fagnani

Spring 2017

Lectures (10 h) and classroom exercise sessions (20 h) for the course on *Dynamics on Networks* in Italian for the Master in Mathematical Engineering — Average student satisfaction: 99%

### Politecnico di Torino

Graduate TA, 40 students, 20 h, with prof. F. Fagnani

Spring 2015–16

Exercise sessions for the course on *Graphs and Dynamics over Networks* in English for the Master in Mathematical Engineering (for two years) — Average student satisfaction: 98%

### Politecnico di Torino

Undergraduate TA, 200 students, 50 h, Italian, with prof. M. Gasparini

Spring 2014

Tutoring for the course on *Complex Analysis and Statistics* for the Bachelor in Electrical Engineering

## Other Academic Activities

**Co-supervisor and Daily Supervisor of Bachelor Thesis:** I tutored and supervised several bachelor students with prof. F. Fagnani (Politecnico di Torino) and prof. M. Cao (University of Groningen)

**Co-supervisor of Master Thesis:** I am currently co-supervising Enrico Tortasso (with A. Rizzo), and Luca Ambrosino (with A. Rizzo and M. Cao).

**Daily supervisor of Master Thesis:** I tutored Giulia Peluffo (with F. Fagnani) and Niek Velthausz (with M. Cao and M. Ye). I have co-supervised Ronak Pillai (with M. Cao and M. Ye), Christian Sorkale (with M. Cao) and Sreekar Ravipati (with M. Cao).

**Guest Lecturer:** I gave guest lectures in prof. Cao's course on Modeling and Analysis of Complex Networks for 3 years (Spring 2020–22).

**Piano Lauree Scientifiche:** I organized a laboratory on “Mathematics and Society” with prof. Francesca Ceragioli and prof. Barbara Franci for high school students.

**Academic Tutor:** I gave lessons as an academic tutor to undergraduate students on Mathematical Analysis I and Complex Analysis at the student campus “Camplaus Lingotto,” Torino.

**Advisory Member of PhD Examining Committees:** Luke Gong, Faculty of Science and Engineering, University of Groningen, the Netherlands. Defense date: April 19, 2022.

## Grants, Scholarships, and Awards

**2022:** *Wiley Top Cited Article 2020-2021.* Paper [J17] has been recognized as top cited paper in Advanced Theory and Simulations.

**2021:** *Borgomanerese dell'anno.* Person of the year from the Municipality of Borgomanero (NO), Italy.

**2018:** *Honorable Mention.* Finalist of the Young Author Award at the NecSys 2018 (with paper [C5]).

**2016:** *Quality Award.* Recognition of excellence in research. Politecnico di Torino (€7,000).

**2014-2017:** *PhD Scholarship.* Full Salary. Università di Torino — Politecnico di Torino (€13,600/year).

**2009:** *Iniziativa “Vinci un PC”.* Award for best students in the entrance test. Politecnico di Torino.

## Publications

### Journal Papers

[J36]: Zino L., Ye M., and Cao M., *Facilitating innovation diffusion in social networks using dynamic norms.* Accepted for publication in PNAS Nexus, 2022.

[J35]: Burbano Lombana D.A., Zino L., Butail S., Caroppo E., Jiang Z.P., Rizzo A., and Porfiri M., *Activity-driven network modeling and control of the spread of two concurrent epidemic strains.* Applied Network Science, **7**, 66, 2022 (doi.org/10.1007/s41109-022-00507-6).

[J34]: Wang Q., Diao W., Zino L., Peng X., and Zhong W., *Observer-Based Secure Event-Triggered Bipartite Consensus Control of Linear Multiagent Systems Subject to Denial-of-Service Attacks.* Published

online in the IEEE Transactions on Circuits and Systems II: Express Briefs, 2022 (doi.org/10.1109/TCSII.2022.3201513).

[J33]: Calafiore G.C., Parino F., **Zino L.**, and Rizzo A., *Dynamic Planning of a Two-Dose Vaccination Campaign with Uncertain Supplies*. European Journal of Operational Research, **304**(3), 1269–1278, 2023 (doi.org/10.1016/j.ejor.2022.05.009).

[J32]: Wang Q., **Zino L.**, Tan D., Xu J., and Zhong W., *Fully Distributed Quantized Secure Bipartite Consensus Control of Nonlinear Multiagent Systems Subject to Denial-of-Service Attacks*. Neurocomputing, **505**, 101–115, 2022 (doi.org/10.1016/j.neucom.2022.07.047).

[J31]: Govaert A., **Zino L.**, Tegling E., *Population games on dynamic community networks*. IEEE Control Systems Letters, **6**, 2695–2700, 2022 (doi.org/10.1109/LCSYS.2022.3174916).

[J30]: Frieswijk K., **Zino L.**, Ye M., Rizzo A., Cao M., *A mean-field analysis of a network behavioural–epidemic model*. IEEE Control Systems Letters, **6**, 2533–2538, 2022 (doi.org/LCSYS.2022.3168260).

[J29]: Truszkowska A., Fayed M., Wei S., **Zino L.**, Butail S., Caroppo E., Jiang Z.P., Rizzo A., and Porfiri M., *Urban determinants of COVID-19 spread: A comparative study across three cities in New York State*. Published online in the Journal of Urban Health, 2022 (doi.org/10.1007/s11524-022-00623-9).

[J28]: Bongiorno C. and **Zino L.**, *A multi-layer network model to assess school opening policies during a vaccination campaign: a case study on COVID-19 in France*. Applied Network Science, **7**, 12, 2022 (doi.org/10.1007/s41109-022-00449-z).

[J27]: Wang Q., He W., **Zino L.**, Tan D., and Zhong W., *Bipartite Consensus for a Class of Nonlinear Multi-agent Systems Under Switching Topologies: A Disturbance Observer-Based Approach*. Neurocomputing, **488**, 130–143, 2022 (doi.org/10.1016/j.neucom.2022.02.081).

[J26]: Truszkowska A., **Zino L.**, Butail S., Caroppo E., Jiang Z.P., Rizzo A., and Porfiri M., *Predicting the effects of waning vaccine immunity against COVID-19 through high-resolution agent-based modeling*. Advanced Theory and Simulations, **5**, 2100521, 2022 (doi.org/10.1002/adts.202100521).

Cover of the June 2022 Issue of Advanced Theory and Simulations.

[J25]: Hagens A., Cordova-Pozo K., Postma M.J., Wilschut J., **Zino L.**, van der Schans J., *Reconstructing the effectiveness of policy measures to avoid next-wave COVID-19 infections and deaths using a dynamic simulation model: implications for health technology assessment of vaccination*. Frontiers in Medical Technologies, **3**, 666581, 2022 (doi.org/10.3389/fmedt.2021.666581).

[J24]: Frieswijk K., **Zino L.**, and Cao M., *A time-varying network model for sexually transmitted infections accounting for behavior and control actions*. Published online in the International Journal of Robust and Nonlinear Control, 2021 (doi.org/10.1002/rnc.5930).

[J23]: **Zino L.** and Cao M., *Analysis, Prediction, and Control of Epidemics: A Survey from Scalar to Dynamic Network Models*. IEEE Circuits and Systems Magazine, **21**(4), 4–23, 2021 (doi.org/10.1109/MCAS.2021.3118100).

[J22]: Ye M., **Zino L.**, Risselada H., Bolderdijk J. W., Mlakar Ž., Fennis B. M., and Cao M., *Collective patterns of social diffusion are shaped by individual inertia and trend-seeking*. Nature Communications, **12**, 5698, 2021 (doi.org/10.1038/s41467-021-25953-1).

[J21]: Parino F., **Zino L.**, Calafiore G.C., and Rizzo A., *A model predictive control approach to optimally devise a two-dose vaccination rollout: A case study on COVID-19 in Italy*. Published online in the International Journal of Robust and Nonlinear Control, 2021 (doi.org/10.1002/rnc.5728).

[J20]: Ye M., **Zino L.**, Rizzo A., and Cao M., *Game-theoretic modeling of collective decision making during epidemics*. Physical Review E, **104**, 024314, 2021 (doi.org/10.1103/PhysRevE.104.024314).

[J19]: Truszkowska A., Thakore M., **Zino L.**, Butail S., Caroppo E., Jiang Z.P., Rizzo A., and Porfiri M., *Designing the safe reopening of US towns through high-resolution agent-based modeling*. Advanced Theory and Simulations, **4**, 2100157, 2021 (doi.org/10.1002/adts.202100157).

Cover of the September 2021 Issue of Advanced Theory and Simulations.

[J18]: Parino F., **Zino L.**, Porfiri M., and Rizzo A., *Modelling and predicting the effect of social distancing and travel restrictions on COVID-19 spreading*. Journal of the Royal Society Interface, **18**, 20200875, 2021

(doi.org/10.1098/rsif.2020.0875).

[J17]: Truskowska A., Behring B., Hasanyan J., **Zino L.**, Butail S., Caroppo E., Jiang Z.P., Rizzo A., and Porfiri M., *High-resolution agent-based modeling of COVID-19 spreading in a small town*. *Advanced Theory and Simulations*, **4**, 2000277, 2021 (doi.org/10.1002/adts.202000277).

Cover of the March 2021 Issue of *Advanced Theory and Simulations*. **Wiley Top Cited Paper 2020–2021**.

[J16]: Como G., Fagnani F., and **Zino L.**, *Imitation dynamics in population games on community networks*. *IEEE Transactions on Control of Network Systems*, **8**(1), 65–76, 2021 (doi.org/10.1109/TCNS.2020.3032873).

[J15]: Hasanyan J., **Zino L.**, Truskowska A., Rizzo A., and Porfiri M., *Analysis of the Heterogeneous Vectorial Network Model of Collective Motion*. *IEEE Control Systems Letters*, **5**(3), 1103–1108, 2021 (doi.org/10.1109/LCSYS.2020.3010630).

[J14]: Nadini M., **Zino L.**, Rizzo A., and Porfiri M., *A multi-agent model to study epidemic spreading and vaccination strategies in an urban-like environment*. *Applied Network Science*, **5**, 68, 2020 (doi.org/10.1007/s41109-020-00299-7).

[J13]: **Zino L.**, Ye M., and Cao M., *A two-layer model for coevolving opinion dynamics and collective decision-making in complex social systems*. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, **30**, 083107, 2020 (doi.org/10.1063/5.0004787).

[J12]: **Zino L.**, Rizzo A., and Porfiri M., *On assessing control actions for epidemic models on temporal networks*. *IEEE Control Systems Letters*, **4**(4), 797–802, 2020 (doi.org/10.1109/LCSYS.2020.2993104)

[J11]: **Zino L.**, Rizzo A., and Porfiri M., *Analysis and control of epidemics in temporal networks with self-excitement and behavioral changes*. *European Journal of Control* **54**, 1–11, 2020 (doi.org/10.1016/j.ejcon.2019.12.007).

[J10]: Hasanyan J., **Zino L.**, Burbano Lombana D.A., Rizzo A., and Porfiri M., *Leader-follower consensus on activity-driven networks*. *Proceedings of the Royal Society A*, **476**(2233), 2020 (doi.org/10.1098/rspa.2019.0485).

[J9]: **Zino L.**, Rizzo A., and Porfiri M., *Consensus over activity driven networks*. *IEEE Transactions on Control of Network Systems*, **7**(2), 866–877, 2020 (doi.org/10.1109/TCNS.2019.2949387).

[J8]: Surano F.V., Bongiorno C., **Zino L.**, Porfiri M., and Rizzo A., *Backbone Reconstruction in Temporal Networks from Epidemic Data*. *Physical Review E*, **100**, 042306, 2019 (doi.org/10.1103/PhysRevE.100.042306).

[J7]: Bongiorno C., **Zino L.**, and Rizzo A., *A novel framework for community modeling and characterization in directed temporal networks*. *Applied Network Science*, **4**(10), 2019 (doi.org/10.1007/s41109-019-0119-28).

[J6]: Nakayama S., Krasner E., **Zino L.**, and Porfiri M., *Social information and spontaneous emergence of leaders in human groups*. *Journal of the Royal Society: Interface*, **16**(151), 2019 (doi.org/10.1098/rsif.2018.0938).

[J5]: **Zino L.**, Rizzo A., and Porfiri M., *Modeling memory effects in activity driven networks*. *SIAM Journal on Applied Dynamical Systems*, **17**(4), 2830–2854, 2018 (doi.org/10.1137/18M1171485).

[J4]: Fagnani F., and **Zino L.**, *Time to extinction for the SIS epidemic model: new bounds on the tail probabilities*. *IEEE Transactions on Network Science and Engineering*, **6**(1), 74–81, 2019 (doi.org/10.1109/TNSE.2017.2772320).

[J3]: **Zino L.**, Rizzo A., and Porfiri M., *An analytical framework for the study of epidemic models on activity driven networks*. *Journal of Complex Networks*, **5**(6), 924–952, 2017 (doi.org/10.1093/comnet/cnx056).

[J2]: Fagnani F., and **Zino L.**, *Diffusion of innovation in large scale graphs*. *IEEE Transactions on Network Science and Engineering*, **4**(2), 100–111, 2017 (doi.org/10.1109/TNSE.2017.2678202).

[J1]: **Zino L.**, Rizzo A., and Porfiri M., *A continuous-time discrete-distribution theory for activity-driven networks*. *Physical Review Letters*, **117**(22), 228302, 2016 (doi.org/10.1103/PhysRevLett.117.228302).

[submitted]: **Zino L.**, Como G., and Fagnani F., *Fast Spread in Controlled Evolutionary Dynamics*.

[submitted]: Deghani Aghbolagh H., Ye M., **Zino L.**, Cao M., and Chen Z., *Coevolutionary Dynamics of Actions and Opinions in Social Networks*.

[submitted]: Truszkowska A., **Zino L.**, Butail S., Caroppo E., Jiang Z.P., Rizzo A., and Porfiri M., *Exploring a COVID-19 endemic scenario: high-resolution agent-based modeling of multiple variants*.

[submitted]: Frieswijk K., **Zino L.**, Cao M., *A Polarized Temporal Network Model to Study the Spread of Recurrent Epidemic Diseases in a Partially Vaccinated Population*.

[submitted]: **Zino L.**, Rizzo A., Porfiri M., *The impact of deniers on epidemics: A temporal network model*.

## Chapters in Books

[CH2]: **Zino L.**, Rizzo A., and Barzel B., *Network Science and Automation*. To appear in Springer Handbook of Automation, 2nd ed. (ed. S.Y. Nof), Springer, 2023.

[CH1]: **Zino L.**, Cao M., *Social Diffusion Dynamics in Cyber-Physical-Human Systems*. To appear in Cyber-Physical-Human Systems: Fundamentals and Applications (ed. A. Annaswamy et al.), Wiley, 2022.

## Conference Papers

[C14]: Frieswijk K., **Zino L.**, Cao M., *Modelling the Effect of Vaccination and Human Behaviour on the Spread of Epidemic Diseases on Temporal Networks*. The 21<sup>st</sup> European Control Conference, Jul 2022, London, UK. (doi.org/10.23919/ECC55457.2022.9838287)

[C13]: **Zino L.**, Ye M., and Cao M., *On modeling social diffusion under the impact of dynamic norms*. The 60<sup>th</sup> IEEE Conference on Decision and Control, Dec 2021, Austin TX, US (doi.org/10.1109/1109/CDC45484.2021.9682999).

[C12]: Cenedese C., **Zino L.**, Cucuzzella M., and Cao M., *Optimal policy design to mitigate epidemics on networks using an SIS model*. The 60<sup>th</sup> IEEE Conference on Decision and Control, Dec 2021, Austin TX, US (doi.org/10.1109/CDC45484.2021.9683737).

[C11]: Frieswijk K., **Zino L.**, and Cao M., *Modelling Behavioural Preferences in Epidemic Models for Sexually Transmitted Infections on Temporal Networks*. The 20<sup>th</sup> European Control Conference, Jun-Jul 2021, Rotterdam, The Netherlands (doi.org/10.23919/ECC54610.2021.9654961).

[C10]: Cunha R., **Zino L.**, and Cao M., *On imitation dynamics in population games with Markov switching*. The 20<sup>th</sup> European Control Conference, Jun-Jul 2021, Rotterdam, The Netherlands (doi.org/10.23919/ECC54610.2021.9655147).

[C9]: **Zino L.**, Ye M., and Cao M., *A Coevolutionary Model for Actions and Opinions in Social Networks*. The 59<sup>th</sup> IEEE Conference on Decision and Control, Dec 2020, Jeju Island, Republic of Korea (10.1109/CDC42340.2020.9303954).

[C8]: Risselada H., Bolderdijk J. W., Mlakar Ž., Fennis B. M., Ye M., and **Zino L.**, *Releasing the brake: How disinhibition frees people and facilitates innovation diffusion*. Proceedings of the European Marketing Academy (49<sup>th</sup>), May 2020, Budapest, Hungary (A2020-64211)

[C7]: **Zino L.**, Rizzo A., and Porfiri M., *Effect of self-excitement and behavioral factors on epidemics on activity driven networks*. The 18<sup>th</sup> European Control Conference, Jun 2019, Naples, Italy (doi.org/10.23919/ECC.2019.8795748)

[C6]: Bongiorno C., **Zino L.**, and Rizzo A., *On unveiling the community structure of temporal networks*. The 57<sup>th</sup> IEEE Conference on Decision and Control, Dec 2018, Miami Beach FL, US (doi.org/10.1109/CDC.2018.8619441).

[C5]: **Zino L.**, Como G., and Fagnani F., *Controlling Evolutionary Dynamics in Networks: A Case Study*. The 7<sup>th</sup> IFAC Workshop on Distributed Estimation and Control in Networked Systems, Aug 2018, Groningen, The Netherlands (doi.org/10.1016/j.ifacol.2018.12.060).

Finalist of the Young Author Award.

[C4]: **Zino L.**, Como G., and Fagnani F., *On stochastic imitation dynamics in large-scale networks*. The 17<sup>th</sup> European Control Conference, Jun 2018, Limassol, Cyprus (doi.org/10.23919/ECC.2018.8550419).

[C3]: **Zino L.**, Como G., and Fagnani F., *On Imitation Dynamics in Potential Population Games*. The 56<sup>th</sup>

IEEE Conference on Decision and Control, Dec 2017, Melbourne, Australia ([doi.org/10.1109/CDC.2017.8263751](https://doi.org/10.1109/CDC.2017.8263751)).

[C2]: **Zino L.**, Como G., and Fagnani F., *Fast Diffusion of a Mutant in Controlled Evolutionary Dynamics*. The 20<sup>th</sup> World Congress of the International Federation of Automatic Control, Jul 2017, Toulouse, France ([doi.org/10.1016/j.ifacol.2017.08.1429](https://doi.org/10.1016/j.ifacol.2017.08.1429)).

[C1]: Fagnani F., and **Zino L.**, *Diffusion of innovation in large scale graphs: a mean field analysis*. 22<sup>nd</sup> International Symposium on Mathematical Theory of Networks and Systems, Jul 2016, Minneapolis MN, US.

### Abstracts in Conferences and Workshops.....

[A29]: Govaert A., **Zino L.**, Tegling E., *On evolutionary population games on community networks with dynamic densities*. Accepted for presentation at the 25<sup>st</sup> International Symposium on Mathematical Theory of Networks and Systems, Sep 2022, Bayreuth, Germany.

[A28]: **Zino L.**, Ye M., Cao M., *Using dynamic norms to facilitate innovation diffusion in networks*. 41<sup>st</sup> Benelux Meeting on Systems and Control, Jul 2022, Bruxelles, Belgium.

[A27]: Frieswijk K., **Zino L.**, Cao M., *The Effect of Vaccination and Human Behaviour in Epidemic Models*. 41<sup>st</sup> Benelux Meeting on Systems and Control, Jul 2022, Bruxelles, Belgium.

[A26]: **Zino L.**, Tortasso E., Ye M., Cao M., and Rizzo A., *A game-theoretic model for human decision-making during epidemics: application and validation on COVID-19 in Italy*. NetSciX 2022, Feb 2022, Porto (Portugal).

[A25]: **Zino L.**, Ye M., Mlakar Ž., Bolderdijk J. W. , Risselada H., Fennis B. M., and Cao M., *Incentivizing social diffusion on networks using a novel game-theoretic model*. NetSciX 2022, Feb 2022, Porto (Portugal).

[A24]: Hoffmann T., Bolderdijk J.W., Rauws W., **Zino L.**, Ye M., *Misguided Expectations Hamper Pro-Environmental Behaviour Change: A Neighbourhood Study*. 11th annual Sustainability Psychology Preconference (SPSP Annual Convention), Feb 2022, San Francisco CA, US.

[A23]: Parino F., **Zino L.**, Calafiore G.C., and Rizzo A., *On optimally devising a two-shot vaccination rollout through MPC*. AUTOMATICA.IT 2021 Workshop, Sep 2021, Catania, Italy.

[A22]: **Zino L.**, Ye M., Rizzo A., and Cao M., *Novel game-theoretic modeling of collective decision-making during epidemics*. Networks 2021: A Joint Sunbelt and NetSci Conference, Jul 2021, Washington DC, US

[A21]: Parino F., **Zino L.**, Porfiri M., and Rizzo A., *A metapopulation model to assess the effectiveness of social distancing and travel restrictions on COVID-19 spreading: the Italian case study*. Networks 2021: A Joint Sunbelt and NetSci Conference, Jul 2021, Washington DC, US

[A20]: Cenedese C., Cucuzzella M., **Zino L.**, Cao M., Scherpen J.M.A., and van der Schaft A.J., *On an optimal control approach toward mitigating an SIS epidemic model*. 2021 European Control Conference, Jun-Jul 2021, Rotterdam, the Netherlands.

[A19]: **Zino L.**, Ye M., Rizzo A., and Cao M., *Modeling Collective Behavioral Response to the COVID-19 Pandemic and Non-Pharmaceutical Interventions*. 2021 Mediterranean Conference on Control and Automation, Jun 2021, Bari, Italy.

[A18]: **Zino L.**, Rizzo A., and Porfiri M., *Optimizing self-protective behaviors and confinement in epidemic models on temporal networks*. NetSci 2020, Sep 2020, Rome, Italy.

[A17]: **Zino L.**, Ye M., and Cao M., *A novel framework to capture the coevolution of opinions and decisions in complex networks*. NetSci 2020, Sep 2020, Rome, Italy.

[A16]: Ye M., **Zino L.**, Mlakar Ž., Bolderdijk J. W. , Risselada H., Fennis B. M., and Cao M., *Understanding and Modeling Behavioral Mechanisms in Social Diffusion*. NetSci 2020, Sep 2020, Rome, Italy.

[A15]: Parino F., **Zino L.**, Rizzo A., and Porfiri M. *A Metapopulation activity-driven network model for COVID-19 in Italy*. AUTOMATICA.IT 2020 Workshop, Sep 2020, Cagliari, Italy.

[A14]: Como G., Fagnani F., **Zino L.**, *On imitation dynamics for potential population games over networks with community patterns*. The 21<sup>th</sup> World Congress of the International Federation of Automatic Control, Jul 2020, Berlin, Germany.

[A13]: **Zino L.**, Rizzo A., and Porfiri M., *On consensus and collective behavior over heterogeneous temporal*



networks. The 21<sup>th</sup> World Congress of the International Federation of Automatic Control, Jul 2020, Berlin, Germany

[A12]: **Zino L.**, Parino F., Porfiri M., and Rizzo A., *A Metapopulation activity-driven network model for COVID-19 in Italy*. IEEE-CSS Italy Workshop on Modeling and Control of the COVID-19 Outbreak, Apr 2020.

[A11]: **Zino L.**, Ye M., and Cao M., *On the inclusion of human cognitive mechanisms in social diffusion*. The 39<sup>th</sup> Benelux Meeting on Systems and Control, Mar 2020, Elspeet, The Netherlands.

[A10]: Mlakar Ž., J. W. Bolderdijk, B. M. Fennis, H. Risselada, M. Ye, and **Zino L.**, *Releasing the brake: How disinhibition frees people and facilitates social change*. Society for Personality and Social Psychology's Annual Convention 2020, Feb 2020, New Orleans LA, US.

[A9]: **Zino L.**, Rizzo A., and Porfiri M., *On consensus over heterogeneous temporal networks*. The 8<sup>th</sup> International Conference on Complex Networks and their Applications, Dec 2019, Lisbon, Portugal.

[A8]: **Zino L.**, Rizzo A., and Porfiri M., *How Self-Excitement Dynamics Affects Epidemic Spreading in Time-Varying Networks*. NetSci 2019, May 2019, Burlington VT, US.

[A7]: Nakayama S., Krasner E., **Zino L.**, and Porfiri M., *Influence of Social Information on Network Dynamics in Human Groups*. SIAM Conference on Dynamical Systems 2019, May 2019, Snowbird UT, US.

[A6]: Bongiorno C., **Zino L.**, and Rizzo A., *On Community Detection in Activity-Driven Networks*. NetSci 2018, Jun 2018, Paris, France.

[A5]: **Zino L.**, Como G., Fagnani F., *Fast diffusion of mutant mosquitoes in controlled evolutionary dynamics*. The 6<sup>th</sup> International Conference on Complex Networks and their Applications, Nov-Dec 2017, Lyon, France.

[A4]: **Zino L.**, *Spreading processes in large scale graphs*. First Italian Meeting on Probability and Mathematical Statistics, Jun 2017, Turin, Italy.

[A3]: **Zino L.**, Rizzo A., and Porfiri M., *A continuous-time discrete-distribution theory for activity-driven networks*. NetSci-X 2017, Jan 2017, Tel Aviv, Israel.

[A2]: **Zino L.**, Rizzo A., and Porfiri M., *A continuous-time discrete-distribution theory for activity-driven networks*. The 5<sup>th</sup> International Workshop on Complex Networks and their Applications, Nov-Dec 2016, Milan, Italy.

[A1]: Rizzo A., and **Zino L.**, *Prediction of spread of epidemics in activity-driven networks*. 2016 Workshop on Complexity in Engineering (COMPENG), Jul 2016, Catania, Italy.

## Talks, Seminars, and Posters

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[T37]: *Using dynamic norms to facilitate innovation diffusion in networks*. The 41<sup>st</sup> Benelux Meeting on Systems and Control, Jul 6, 2022, Bruxelles, Belgium.

[T36]: *Toward realistic modeling of social diffusion*. Department of Automatic Control, Lund University, May 10, 2022, Lund, Sweden (invited, online).

[T35]: *A game-theoretic model for human decision-making during epidemics: application and validation on COVID-19 in Italy*. NetSci-X 2022, Feb 10, 2022, Porto, Portugal

[T34]: *Incentivizing social diffusion on networks using a novel game-theoretic model*. NetSci-X 2022, Feb 10, 2022, Porto, Portugal.

[T33]: *Toward a realistic modeling of social diffusion on networks*. Institute for Information and Communication Technologies, Electronics and Applied Mathematics, Université catholique de Louvain, Jan 24, 2022, Louvain-la-Neuve, Belgium (invited).

[T32]: *On modeling social diffusion under the impact of dynamic norms*. The 60<sup>th</sup> IEEE Conference on Decision and Control, Dec 16, 2021, Austin TX, US (online, invited).

[T31]: *Collective patterns of social diffusion are shaped by individual inertia and trend-seeking*. Norms and Networks Cluster (NNC) Group Meeting, Faculty of Behavioural and Social Sciences, University of Groningen, Nov 5, 2021, Groningen, the Netherlands.

- [T30]: *Modeling Collective Behavioral Response to the COVID-19 Pandemic and Non-Pharmaceutical Interventions*. Mediterranean Conference on Control and Automation, Jun 24, 2021, Bari, Italy (online, invited).
- [T29]: *Consensus over activity driven networks: a starting point to examine model-based control with heterogeneous and time-varying patterns of interactions*. Controlling Complex Networks (Satellite Symposium of Network 2021), Jun 23, 2021, Washington DC, US (online, invited).
- [T28]: *Modelling collective decision-making during epidemics*. RxCovea Journal Club, Apr 19, 2021 (online, invited).
- [T27]: *Optimizing self-protective behaviors and confinement in epidemic models on temporal networks*. The 59<sup>th</sup> IEEE Conference on Decision and Control, Dec 17, 2020, Jeju Island, Republic of Korea (online).
- [T26]: *A Coevolutionary Model for Actions and Opinions in Social Networks*. The 59<sup>th</sup> IEEE Conference on Decision and Control, Dec 14, 2020, Jeju Island, Republic of Korea (online, invited).
- [T25]: *Including behavioral mechanisms in models for social diffusion*. Dynamics in Social and Economic Networks (CDC Workshop), Dec 12–13, 2020, Jeju Island, Republic of Korea (online, invited).
- [T24]: *On imitation dynamics in population games on networks with community patterns*. STAEOnline — Online Seminars in Systems Theory and Engineering, Oct 16, 2020, Melbourne, Australia (online, invited).
- [T23]: *Optimizing self-protective behaviors and confinement in epidemic models on temporal networks*. NetSci 2020, Sep 25, 2020, Rome, Italy (online).
- [T22]: *A novel framework to capture the coevolution of opinions and decisions in complex networks*. NetSci 2020 Sep 24, 2020, Rome, Italy (online).
- [T21]: *On imitation dynamics in population games on networks with community patterns*. Multiscale Analysis of Dynamical Processes on Networks (NetSci 2020 Satellite), Sep 20, 2020, Rome, Italy (online, invited).
- [T20]: *A Metapopulation activity-driven network model for COVID-19 in Italy*. AUTOMATICA.IT 2020, Sep 10, 2020, Cagliari, Italy (online, invited).
- [T19]: *On imitation dynamics for potential population games over networks with community patterns*. The 21<sup>th</sup> World Congress of the International Federation of Automatic Control, Jul 2020, Berlin, Germany (online).
- [T18]: *On consensus and collective behavior over heterogeneous temporal networks*. The 21<sup>th</sup> World Congress of the International Federation of Automatic Control, Jul 2020, Berlin, Germany (online).
- [T17]: *A Metapopulation activity-driven network model for COVID-19 in Italy*. IEEE-CSS Italy Workshop on Modeling and Control of the COVID-19 Outbreak, Apr 24, 2020 (online).
- [T16]: *On the inclusion of human cognitive mechanisms in social diffusion*. The 39<sup>th</sup> Benelux Meeting on Systems and Control, Mar 11, 2020, Elspeet, The Netherlands.
- [T15]: *On consensus over heterogeneous temporal networks*. The 8<sup>th</sup> International Conference on Complex Networks and their Applications, Dec 10, 2019, Lisbon, Portugal.
- [T14]: *On imitation dynamics in potential population games*. Network Dynamics in the Social, Economic, and Financial Sciences, Nov 5, 2019, Turin, Italy (invited).
- [T13]: *How to Achieve Fast Spread in Controlled Evolutionary Dynamics*. Resilient Control of Infrastructure Networks, Sep 26, 2019, Turin, Italy (invited).
- [T12]: *How Self-Excitement Dynamics Affects Epidemic Spreading in Time-Varying Networks*. NetSci 2019, May 29, 2019, Burlington VT, US.
- [T11]: *Fast diffusion of mutant mosquitoes in controlled evolutionary dynamics: a case study*. The 13<sup>th</sup> SICCC International Tutorial Workshop "Complexity and the City", Oct 29, 2018, Turin, Italy.
- [T10]: *Diffusion Processes on Networks*. PhD Dissertation Defense, Oct 9, 2018, Torino, Italy.
- [T9]: *Controlling Evolutionary Dynamics in Networks: A Case Study*. The 7<sup>th</sup> IFAC Workshop on Distributed Estimation and Control in Networked Systems, Aug 28, 2018, Groningen, the Netherlands (poster).
- [T8]: *Controlling Spreading Processes in Networks*. DISMA Weekly Seminar, Jul 11, 2018, Torino, Italy (invited).
- [T7]: *On stochastic imitation dynamics in large-scale networks*. The 17<sup>th</sup> European Control Conference, Jun

15, 2018, Limassol, Cyprus (invited).

[T6]: *Diffusion Processes on Networks*. DSL Weekly Seminar, Mar 2, 2018, Brooklyn NY, US (invited).

[T5]: *Fast diffusion of mutant mosquitoes in controlled evolutionary dynamics*. The 6<sup>th</sup> International Conference on Complex Networks and their Applications, Nov 30, 2017, Lyon, France.

[T4]: *Fast Diffusion of a Mutant in Controlled Evolutionary Dynamics*. The 20<sup>th</sup> World Congress of the International Federation of Automatic Control, Jul 13, 2017, Toulouse, France.

[T3]: *Spreading processes in large scale graphs*. First Italian Meeting on Probability and Mathematical Statistics, Jun 20, 2017, Turin, Italy (invited).

[T2]: *A continuous-time discrete-distribution theory for activity-driven networks*. The 5<sup>th</sup> International Workshop on Complex Networks and their Applications, Dec 2, 2016, Milan, Italy.

[T1]: *Diffusion of innovation in large scale graphs: a mean field analysis*. 22<sup>nd</sup> International Symposium on Mathematical Theory of Networks and Systems, Jul 14, 2016, Minneapolis MN, US.

## Outreach and Media Coverage

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Advanced Science News, *Waning immunity and COVID-19 boosters modeled in digital town*. Feb 28, 2022.

La Stampa, *L'ingegnere di Borgomanero che studia gli algoritmi per capire la diffusione del virus*. Jan 3, 2022.

La Stampa, *"Borgomanerese dell'anno" il giovane matematico Lorenzo Zino: "Studio i comportamenti umani, così fermeremo i virus"*. Oct 24, 2021.

Curtin University Media Release, *New insights into social norms can drive positive social changes*. Oct 1, 2021.

Science LinX, *How a committed minority can change society*. Sep 29, 2021.

SIAM News, *Novel Mathematical Framework Explores How Opinions and Decisions Coevolve*. Jul 22, 2021.

PoliFlash Magazine, *Covid-19: un modello per prevedere la diffusione del virus in Italia e ottimizzare il piano vaccinale*. Feb 10, 2021.

Advanced Science News, *Vaccinating the most vulnerable first may not have the greatest impact on COVID-19, new model suggests*. Jan 27, 2021.

New York Post, *Mass COVID-19 vaccinations accomplish more than targeted vaccine roll outs*. Jan 23, 2021.

PoliFlash Magazine, *Un modello ad alta risoluzione per prevedere l'evoluzione del Covid-19*. Jan 22, 2021.

EurekAlert!, *New COVID-19 model shows little benefit in vaccinating high-risk individuals first*. Jan 19, 2021.

ScienceDaily, *New mathematical model shows how diversity speeds consensus*. Jan 8, 2020.

ScienceDaily, *In small groups, people follow high-performing leaders*. Feb 21, 2019.

Futurity, *How leaders rise from small groups*. Feb 21, 2019.

Contagion Live, *Fighting Flu With Math: Predicting Peak Season, Spread, and Vaccination Patterns*. Feb 18, 2019.

Infection Control Today, *NYU Researchers Fight Flu With Math*. Feb 7, 2019.

La Stampa Novara, *Spiego con la matematica la diffusione delle epidemie*. Dec 27, 2018.

PoliFlash Magazine, *Le interazioni sociali possono influire sulla diffusione di una malattia?*. Dec 12, 2018.

NSF News, *Researchers find clue to epidemics in 'bursty' social behavior*. Dec 12, 2018.

EurekAlert, *Clue to Epidemics In Bursty Social Behavior*. Dec 12, 2018.

SIAM News, *Can Social Interactions Affect Spread of Disease?*. Dec 12, 2018.

La Stampa, *Il matematico torinese: stesso algoritmo per spiegare epidemie e bufale mediatiche*. Jan 7, 2017.

La Stampa Torino, *Fronteggiare le epidemie si può, è matematico: Si diffondono con i meccanismi dei Social*. Dec 6, 2016.

Repubblica Torino, *Epidemie, nuovo modello del Politecnico di Torino: Si propagano come i trend topic su*

Twitter. Dec 6, 2016.

R&D Magazine, *New Model to Predict Disease Outbreak*. Nov 30, 2016.

## Further Professional and Scientific Activities

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**Associate Editor:** Journal of Computational Science (2021 – ongoing)

**Program Committee Member:** International Conference on Complex Networks and their Applications COMPLEX NETWORKS (2019 – ongoing)

**Organizer of Invited Sessions:** 59th, 60th, 61st IEEE Conference on Decision and Control (CDC 2020,21,22), 29th Mediterranean Conference on Control and Automation (MED 2021)

**Chair of Parallel Sessions at International Conferences:** 29th Mediterranean Conference on Control and Automation (MED 2021)

**Journal Reviewer:** IEEE Transactions on Automatic Control; IEEE Transactions on Circuits and Systems II: Express Briefs; IEEE Transactions on Control of Network Systems; IEEE Control Systems Letters; IEEE Transactions on Network Science and Engineering; IEEE Access; IEEE Transactions on Emerging Topics in Computational Intelligence; IEEE Signal Processing Letters; IFAC Automatica; Scientific Reports; Chaos: An Interdisciplinary Journal of Nonlinear Science; The Journal of the Royal Society Interface; Royal Society Open Science; SIAM Journal on Control and Optimization; International Journal of Robust and Nonlinear Control; PLOS ONE; Journal of the Franklin Institute; Advanced Science; Springer Applied Network Science; Springer Social Network Analysis and Mining; Journal of Complex Networks; Network Science; Mathematical Biosciences and Engineering; The Journal of Mathematical Sociology; International Journal of Control; Physica A; American Journal of Tropical Medicine & Hygiene; International Journal of Infectious Diseases; ASME Journal of Vibration and Acoustics; Complexity; Journal of Statistical Mechanics: Theory and Experiments; Advanced Theory and Simulations; Biology; Mathematics and Computers in Simulation; International Journal of Environmental Research and Public Health; Fractal and Fractional; Frontiers Public Health; Health Policy; Environment, Development and Sustainability

**Conference Reviewer:** IEEE Conference on Decision and Control (CDC 2017–22); American Control Conference (ACC 2018, 2020–22); European Control Conference (ECC 2018, 2020–22); IFAC World Congress (IFAC WC 2020); International Symposium on Mathematical Theory of Networks and Systems (MTNS 2016–18); IEEE International Symposium on Circuits and Systems (ISCAS 2018); International Conference on Complex Networks and their Applications (COMPLEX NETWORKS 2016–17, 2019–22); Mediterranean Conference on Control and Automation (MED 2019, 2021); European Conference on Circuit Theory and Design (ECCTD 2017); Workshop on Complexity in Engineering (COMPENG 2016)

**Project Funding Reviewer:** Swiss National Science Foundation.

**Professional Memberships:** Member of the Network Science Society (since 2019), the IEEE (Institute of Electrical and Electronics Engineers, since 2021) and of the CSS (Control Systems Society, since 2021), Affiliate of the IFAC (International Federation of Automatic Control, since 2021)

## Other Skills

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**OS:** Microsoft Windows XP, Vista, 7, 10

**Development:** MATLAB (advanced level), HTML, Microsoft Excel, SQL, R, PL-SQL (intermediate level), C, PENTAO, MATHEMATICA, WinBUGS, MINITAB, RAPIDMINER (basic level)

**Text processing:** L<sup>A</sup>T<sub>E</sub>X, Scribus, Microsoft Office (Word, PowerPoint)

**Image processing:** Adobe Photoshop CS3, CC

**Languages:** Italian (mother-tongue); English (full professional proficiency); Dutch (beginner)

**Last update:** Groningen, The Netherlands, September 29, 2022