Lorenzo Zino | Curriculum Vitæ

G. L. Lagrange Department of Mathematical Sciences, Politecnico di Torino
Corso Duca degli Abruzzi, 24 - 10129 Torino, Italy
lorenzo.zino@unito.it - `calvino.polito.it/~zino/index`

Current Position

Nov 2014 - ongoing: **Phd Candidate in Pure and Applied Mathematics**

G. Peano Department of Mathematics, Università di Torino, Torino, Italy
G. L. Lagrange Department of Mathematical Sciences, Politecnico di Torino, Torino, Italy

Previous Positions

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

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

Research Interests

I am interested in dynamical systems over networks, in particular diffusion dynamics (such as spread of epidemics, opinions, information,...), graph theory, applied probability and game theory. I like the modeling, the analysis and the control aspects of dynamics over networks.

Keywords: *multi-agent, opinion dynamics, large-scale networks, epidemics, control, evolutionary games, imitation dynamics, applied probability, graph theory, temporal networks, synchronization*

Education

Master in Mathematical Modeling (Laurea Magistrale in 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*
Advisor and Defence Date: Prof. Fabio Fagnani. July 24, 2014.

Bachelor in Applied Mathematics (Laurea in 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*
Advisor and Defence Date: Prof. Paola Siri. October 11, 2012.

High School Degree (Maturità Scientifica PNI)

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

Visiting Periods

NYU, Tandon School of Engeneering   **Dept. Mechanical and Aerospace Engineering**
Visiting PhD student   *Dec 2017-Mar 2018*
I worked on modeling epidemic spreading over time-varying networks of interactions in the Dynamical Systems Laboratory (with prof. M. Porfiri).

Lund University, LTH   **Department of Automatic Control**
Visiting PhD student   *Sep-Dec 2015*
There I took two graduate courses and I start working on analysis and control of evolutionary dynamics over networks (with prof. G. Como).

Summer Schools, Conferences, and Workshops

7th Annual European Control Conference
June 12-15, 2018, Limassol, Cyprus (upcoming)

The 6th International Conference on Complex Networks and their Applications
Nov 29 - Dec 1, 2017, Lyon, France

The 22nd World Congress of International Federation of Automatic Control
Jul 10-14, 2017, Toulouse, France

The First Italian Meeting on Probability and Mathematical Statistics
Jun 19-22, 2017, Turin, Italy

The 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), USA

Summer School on Information Processing for Large Networks
Jun 8-12, 2015, Les Diablerets, Switzerland, EPFL, ETH Zurich.

Graduate Courses Attended

Introduction to Dynamical Systems
prof. Riccardo Adami, Politecnico di Torino. 20 h - 4 CFU (with exam)   *Mar-May 2015*

Optimization Under Uncertainty: Modeling and Solution Methods
prof. Paolo Brandimarte, Politecnico di Torino. 30 h - 6 CFU (with exam)   *Apr-Jun 2015*

Applied Probability and Stochastic Processes
prof. Riccardo Zecchina, Politecnico di Torino. 30 h - 6 CFU (with exam)   *May-Jul 2015*

Community detection in stochastic block models via spectral methods
prof. Laurent Massuliè, Summer School on IPLN (EPFL-ETH). 7.5 h   *Jun 2015*

Semidefinite programming relaxations for statistical inference
prof. Andrea Montanari, Summer School on IPLN (EPFL-ETH). 7.5 h   *Jun 2015*

Hybrid Systems
prof. Maria Prandini, Lund University. 20 h - 4 CFU (with exam)   *Oct 2015*

Large-Scale Convex Optimization
prof. Pontus Giselsson, Lund University. 37.5 h - 7.5 CFU (with exam)   *Nov-Dec 2015*
Network theory: from statistical mechanics to random complex geometries
prof. Ginestra Bianconi, Politecnico di Torino. 15 h   *Dec 2016*

Teaching Experience

ESCP Europe   **Turin**
Graduate teaching assistant, 30 students, 4 h, English, with prof. F. Pellerey   *Fall 2017*
Exercise sessions for the course on *Fundamentals of Mathematics 2* for the Bachelor in Management

Politecnico di Torino   **Turin**
Graduate teaching assistant, 200 students, 30 h, Italian, with prof. F. Fagnani   *Spring 2017*
Lectures and exercise sessions for the course on *Complex Analysis* for the Bachelor in Physical and Mathematical
Engineering

Politecnico di Torino   **Turin**
Graduate teaching assistant, 40 students, 30 h, Italian, with prof. F. Fagnani   *Spring 2017*
Lectures and exercise sessions for the course on *Dynamics over Networks* for the Master in Mathematical
Engineering

ESCP Europe   **Turin**
Graduate teaching assistant, 15 students, 6 h, English, with prof. F. Pellerey   *Fall 2016*
Exercise sessions for the course on *Fundamentals of Mathematics 2* for the Bachelor in Management

Politecnico di Torino   **Turin**
Graduate teaching assistant, 40 students, 20 h, English, with prof. F. Fagnani   *Spring 2015-16*
Exercise sessions for the course on *Graphs and Dynamics over Networks* for the Master in Mathematical
Engineering

Politecnico di Torino   **Turin**
Undergraduate teaching assistant, 200 students, 50 h, Italian, 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 of Bachelor Thesis: I tutored some bachelor students in the work for their thesis
with prof. Fabio Fagnani

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

Grants, Scholarships, and Awards

2016: *Quality Award*. Recognition of excellence in research. Politecnico di Torino.

2014-2017: *PhD Scholarship*. Full Salary. Università di Torino - Politecnico di Torino.

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

Publications

Journal Papers

[J4]: Fagnani F., and Zino L., *Time to extinction for the SIS epidemic model: new bounds on the tail probabilities. Accepted for publication in IEEE Transactions on Network Science and Engineering*

[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.

[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.

[J1]: Zino L., Rizzo A., and Porfiri M., *A continuous-time discrete-distribution theory for activity-driven networks.* Physical Review Letters, **117**, 228302, 2016

submitted: Zino L., Rizzo A., and Porfiri M., *Modeling memory effects in activity driven networks.*

submitted: Nakayama S., Krasner E., Zino L., and Porfiri M., *Social information and spontaneous emergence of leaders in human groups.*

Conference Papers

[C4]: Zino L., Como G., and Fagnani F., *On stochastic imitation dynamics in large-scale networks.* The 17th European Control Conference, June 2018, Limassol, Cyprus. *Accepted for presentation.*

[C3]: Zino L., Como G., and Fagnani F., *On Imitation Dynamics in Potential Population Games.* The 56th IEEE Conference on Decision and Control, December 2017, Melbourne, Australia.

[C2]: Zino L., Como G., and Fagnani F., *Fast Diffusion of a Mutant in Controlled Evolutionary Dynamics.* The 20th World Congress of the International Federation of Automatic Control, July 2017, Toulouse, France.

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

submitted: Bongiorno C., Zino L., and Rizzo A., *On unveiling the community structure of temporal networks.*

submitted: Zino L., Como G., and Fagnani F., *Controlling Evolutionary Dynamics in Networks: A Case Study.*

Abstracts in Conferences and Workshops

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

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

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

[A3]: Zino L., Rizzo A., and Porfiri M., *A continuous-time discrete-distribution theory for activity-driven networks.* International School and Conference on Network Science (NetSci-X 2017), January 2017, Tel Aviv, Israel.

[A2]: Zino L., Rizzo A., and Porfiri M., *A continuous-time discrete-distribution theory for activity-driven networks.* The 5th International Workshop on Complex Networks and their Applications, November-December 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), July 2016, Catania, Italy.

Talks and Seminars

Fast diffusion of mutant mosquitoes in controlled evolutionary dynamics. The 6th International Conference on Complex Networks and their Applications, November 30, 2017, Lyon, France.

Fast Diffusion of a Mutant in Controlled Evolutionary Dynamics. The 20th World Congress of the International Federation of Automatic Control, July 13, 2017, Toulouse, France.

Spreading processes in large scale graphs. First Italian Meeting on Probability and Mathematical Statistics, June 20, 2017, Turin, Italy.

A continuous-time discrete-distribution theory for activity-driven networks. The 5th International Workshop on Complex Networks and their Applications, December 2, 2016, Milan, Italy.

Diffusion of innovation in large scale graphs: a mean field analysis. 22nd International Symposium on Mathematical Theory of Networks and Systems (MTNS), July 14, 2016, Minneapolis (MN), US.

Outreach and Media Coverage

La Stampa, *Il matematico torinese: stesso algoritmo per spiegare epidemie e bufale mediatiche* (in Italian). January 7, 2017.

La Stampa Torino, *Fronteggiare le epidemie si può, è matematico: Si diffondono con i meccanismi dei Social* (in Italian). December 6, 2016.

Repubblica Torino, *Epidemie, nuovo modello del Politecnico di Torino: Si propagano come i trend topic su Twitter* (in Italian). December 6, 2016.

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

Reviewer Activity

Journals: IEEE Transactions on Network Science and Engineering, IEEE Transactions on Control of Network Systems, IEEE Transactions on Circuits and Systems II: Express Briefs, IEEE Control Systems Letters, Nature Scientific Report

Conferences: IEEE Conference on Decision and Control (CDC 2017, 2018), American Control Conference (ACC 2017), European Control Conference (ECC 2018), International Symposium on Mathematical Theory of Networks and Systems (MTNS 2016, 2018), IEEE International Symposium on Circuits and Systems (ISCAS 2018), International Conference on Complex Networks and Their Applications (COMPLEX NETWORKS 2016, 2017), European Conference on Circuit Theory and Design (ECCTD 2017), Workshop on Complexity in Engineering (COMPENG 2016).

Technical Skills

OS: Microsoft Windows XP, Vista, 7, 10

Development: MATLAB (advanced level)

HTML, Microsoft Excel, SQL, R, PL-SQL, MINITAB, RAPIDMINER (intermediate level)

C, PENTAHO, MATHEMATICA, WinBUGS (basic level)

Text processing: LaTeX, Scribus, Microsoft Office (Word, PowerPoint)
Image processing: Adobe Photoshop CS3

Languages

Italian: Mother-tongue
English: Full professional proficiency. (*FCE Grade A - Level C1, PET with Merit - Level B2*)

For references please contact

prof. **Giacomo Como**: Lund University and Politecnico di Torino, giacomo.como@control.lth.se
prof. **Fabio Fagnani**: Politecnico di Torino, fabio.fagnani@polito.it
prof. **Maurizio Porfiri**: New York University, mporfiri@nyu.edu
prof. **Alessandro Rizzo**: Politecnico di Torino, alessandro.rizzo@polito.it

Last update: May 3, 2018