MARTINA ALUTTO

Postdoctoral Researcher
at KTH Royal Institute of Technology
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RESEARCH EXPERIENCE

Postdoctoral Researcher **2025 - current**
KTH Royal Institute of Technology, Stockholm, Sweden
Supervisors: ass. prof. Angela Fontan and prof. Karl Henrik Johannson.
Research topics: Social networks, opinion dynamics, network systems
I am affiliated with the Wallenberg AI, Autonomous Systems and Software Program (WASP).

Research Fellow **2024 - 2025**
National Research Council (CNR), Torino, Italy
Supervisors: prof. Chiara Ravazzi and prof. Fabrizio Dabbene
The project focused on the analysis and control of innovation adoption models coupled with opinion dynamics.

PhD Student in Pure and Applied Mathematics **2021 - 2024**
Politecnico di Torino - Università di Torino, Torino, Italy
Supervisors: prof. Fabio Fagnani and prof. Giacomo Como
The PhD project is titled "Analysis and Control of Epidemics".

RESEARCH VISITS

University of Tokyo, Tokyo, Japan **06 / 2025 - 07 / 2025**
Supervisors: prof. Hideaki Ishii
Research was about control of innovation adoption-opinion models.

Cornell University, Ithaca (NY), USA **09 / 2023 - 02 / 2024**
Supervisors: prof. Francesca Parise
Research was about optimal control problem on epidemic models.

EDUCATION

Master's Degree in Mathematical Engineering **2018 - 2021**
Politecnico di Torino, Torino, Italy
Final grade: 110/110 cum laude
Degree obtained on date 03/21/21 (academic year 2020/21)
Thesis title: "Feedback Control Policies and Network Effects in Epidemics Models"
Thesis supervisors: prof. Fabio Fagnani and prof. Giacomo Como

Bachelor's Degree in Mathematics for Engineering **2015 - 2018**
Politecnico di Torino, Torino, Italy

High School Degree **2010 - 2015**
Liceo Scientifico "G. Giolitti G.B. Gandino" (Bra, Italy)

TEACHING EXPERIENCE

Teaching assistant for the course "Mathematical Analysis II" **2022 - 2023**
Politecnico di Torino
30h of exercise lessons for undergraduate engineering students
Teaching assistant for the course "Mathematical Methods" **2023 - current**
Politecnico di Torino
115h (five courses of 15h and two courses of 20h) of exercise lessons for undergraduate engineering students

SKILLS

Languages **Italian** native speaker; **English** fluent (IELTS Certification 6.5, 2015)
Programming Python, Latex, C, C++, R, Matlab

PUBLICATIONS

Journal Papers
1. M. Alutto, L. Cianfanelli, G. Como, F. Fagnani and F. Parise, **Optimal Control for Behavioral-Feedback SIR Epidemic Model**, In preparation.
2. M. Alutto, L. Cianfanelli, G. Como and F. Fagnani, **Behavioral-Feedback Network SIR Model**, Submitted.
3. M. Alutto, S. Bellotti, F. Dabbene, C. Ravazzi, **Modeling and Control of Sustainable Transitions through Opinion-Behavior Coupling in Heterogeneous Networks,** Submitted.
4. M. Alutto, Q. Xu, F. Dabbene, H. Ishii, and C. Ravazzi, **Predictive Control Strategies for Sustaining Innovation Adoption on Multilayer Social Networks**, Submitted.
5. M. Alutto, L. Cianfanelli, G. Como and F. Fagnani, **On the Dynamic Behavior of the Network SIR Epidemic Model**, in *IEEE Transactions on Control of Network Systems*, vol. 12, no. 1, pp. 177-189, March 2025, doi: 10.1109/TCNS.2024.3448136.

Conference Papers
1. M. Alutto, Q. Xu, F. Dabbene, H. Ishii, and C. Ravazzi, **Model Predictive Control for Coupled Adoption-Opinion Dynamics**, Accepted to CDC 2025.
2. M. Alutto, L. Cianfanelli, G. Como, F. Fagnani and F. Parise, **Behavioral-Feedback SIR Epidemic Model: Analysis and Control**, Accepted to CDC 2025.
3. M. Alutto, L. Cianfanelli, G. Como, F. Fagnani. **Multiple Peaks in Network SIR Models.** Proc. of the 61st IEEE Conference on Decision and Control (CDC 2022).
4. M. Alutto, G. Como, F. Fagnani. **On SIR Epidemic Models with Feedback-Controlled Interactions and Network Effects.** Proc. of the 60th IEEE Conference on Decision and Control (CDC 2021).

SEMINARS

Conference presentations
1. SIAM Conference on Applications of Dynamical Systems (DS25) 2025, Denver, USA.
2. 61st IEEE Conference on Decision and Control CDC 2022, Cancún, Mexico.
3. 25th International Symposium on Mathematical Theory of Networks and Systems MTNS 2022, Bayreuth, Germany.

4. 60th IEEE Conference on Decision and Control CDC 2021, online.

I held presentations about my research during
- A visiting period to prof. Yoshio Ebihara's research group at Ito Campus, Kyushu University, Fukuoka. (07/2025)
- The RACOT seminar with other ASPIRE-related researchers. (07/2025)
- A visiting period to prof. Hideaki Ishii's lab at the University of Tokyo for one month, as part of the ASPIRE program. (06/2025)
- A short visiting period at KTH, Stockholm for prof. K. H. Johannson's research group (10/2024)
- The course "Topics in dynamical systems" at the Cornell University with prof. Strogatz (11/2023)
- The FIND Graduate Day at the ECE department at the Cornell University (09/2023)

GRANTS

- Travel grant to attend the 64th IEEE Conference on Decision and Control, Rio de Janeiro, Brazil, 2025.
- Travel grant to attend the *25th International Symposium on Mathematical Theory of Networks and Systems,* Bayreuth, Germany, 2022.

OTHER ACTIVITIES

- Co-Supervisor of a master's thesis on "Analyzing Opinion Spreading in Dynamic Signed Social Networks Using Real-World Data" at KTH.
- Reviewer for Review Commons, Nonlinear Analysis: Hybrid Systems, ACC, IEEE Transactions on Automatic Control (TAC), IEEE Transactions on Control of Network Systems (TCNS), CDC;
- Member of the organization of the Workshop "Algorithmic game theory, mechanism design, and learning", Politecnico di Torino, Turin, 08-11 November, 2022.
- Tutor for "Mathematical Analysis" for undergraduate students at the college Camplus Bernini, Turin