Dr. Sara Colella

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━━━━━━ Summary

Qualification Ph.D. in Computer Science (grade *"magna cum laude"*) with a focus on Network Analysis with a strong background in Physics

Skills 6+ years of experience with analysis of large, complex datasets

Strong programming, statistical analysis and visualization skills

Good ability in working in teams with previous leadership roles

Working experience in interdisciplinary environments

Ability to communicate findings and experiment designs to diverse audiences

━━━━━━ Research and Work Experiences

3/2020 – now **Business analyst: Assistant Content Leader**, *Software House Systemorph*, Zürich, Switzerland.
Technical and Communication Skills
- Financial data management for insurance companies focusing on Data Model for IFRS17 implementation.

10/2016 – 12/2019 **Researcher – PhD candidate**, *Computer Science department & Graduate School of Decision Science*, Konstanz, Germany.
Dissertation: *Positive Spillover Effect in Attention Dynamics*
Supervisors: *Ulrik Brandes, Andreas Jungherr & Urs Fischbacher*

Data Mining and Analysis Skills
- Collect Twitter data with Python and manage a 40 GB dataset with Bash. The dataset was composed by the messages posted in 2018 by almost 500,000 Twitter users connected to the Italian cultural space
- Analyse the attention dynamics of the Twitter population for a specific class of topics through the shape of the time series of their sharing behaviour in Python
- Formalize an explanatory model for the detected attention dynamics based on news values in R
- Identify and classify topic mutual influence in their sharing diffusion through the tools of Network Analysis. In particular I focused on how a topic helps the diffusion of an other topic on Twitter
- Rethink the concept of Centrality in Network Analysis

Communication Skills
- Present findings and project design at collaboration meetings, international conferences and to reviewers
- Authored PhD thesis and publications based on data analysis

5 – 10/2016 **Consultant**, *Software house APL italiana (Now SimCorp Sofia)*, Milan, Italy.
Technical and Communication Skills
- Daily contact wit the clients, employees of insurance companies, to detect their difficulties with the program SOFIA and help them in making use of the software
- Implement clients' suggestions in the new versions of the program SOFIA in collaborations with the software developers

9/2013 – 12/2015 **Master in Physics of Complex Systems**, *Università degli Studi di Torino & Center for Micro-BioRobotics of the Italian Institute of Technology*, Torino – Pontedera (Pisa), Italy.
Dissertation: *Cooperative Growth Model for Plant Roots*
Supervisors: *Federico Bosia, Barbara Mazzolai & Ettore Vittone*

Modeling and Experiment Design Skills
- Formulate a model hypothesizing the existence of communication among plant roots and test its advantages for the plant energy balance through computer simulations in Matlab
- Design a lab experiment to prove the existence of communication among plant roots

Communication Skills
- Present findings and project design in front of an interdisciplinary audience: physicists, plant biologists, chemists and computer scientists
- Authored Master thesis

	Erasmus
9/2013 – 6/2014	**Master in Complex Systems in Applied Physics**, *Chalmers University of Technology* Göteborg, Sweden

Group projects in Automation:

○ Program and construct, based on the Arduino platform, a robot able to avoid walls and detect a target using photosensors

○ Program in C# a humanoid robot able to detect and light up a candle

Group project in Simulation:

○ Implement in Matlab a simulation model of segregation in cities, based on Schiller's model

	Teaching
3 – 5/2019	**Tutor**, *ETH Zurich*, Zurich, Switzerland. Tutoring for the seminar Applied Network Science (held by professor Ulrik Brandes) at the Department of Humanities, Social and Political Sciences
1 – 2/2014	**Laboratory assistant**, *Università degli Studi di Torino*, Turin, Italy. Laboratory assistant for a course in basic physics (held by professor Nicola Carlo Amapane) at the Biotechnology Department
10 – 12/2013	**Tutor**, *Università degli Studi di Torino*, Turin, Italy. Tutoring for a basic informatics course (held by professor Stefano Berardi) at Physics Department

Education

10/2016 – 12/2019	**PhD in Network analysis**, *Computer Science department & Graduate School of Decision Science*, Konstanz, , Germany. *Final grade* "magna cum laude".
9/2013 – 12/2015	**Master in Physics of Complex Systems**, *Università degli Studi di Torino*, Turin, Italy. *Final grade* 110/110.
10/2010 – 7/2013	**Bachelor in Physics** *Università degli Studi di Torino*, Turin, Italy. *Final grade* 99/110.

Skills

Programming languages

Advanced	Python
Intermediate	Matlab, R, C# (LINQ)
Basic	Bash, C, C++, SQL
GitHub folder	https://github.com/saracolella/territorial_communities.git

Databases and Programs

PostgreSQL, Mathematica, Comsol and LaTeX

Languages

Italian	Mother tongue
English	Fluent in reading, writing and speaking. *First Certificate in English with grade A*
German	Intermediate (TELC with level A2)
French	Basic

Publications and current research projects

Publication	**F.Bosia, S.Colella, V.Mattoli, B.Mazzolai and N. M. Pugno. 2014.** ***Hierarchical multiple peeling simulations. RSC Adv. 4:25447-25452*** http://dx.doi.org/10.1039/C4RA03459G
Working papers	**The Effects of COVID-19 Lockdowns on Mental Health: A Twitter-bases Analysis** *with Rémi Vivès, F. Dufourt and V.Hindebrand* **Twitterspheres of Different Countries: A Detailed Database** *with Rémi Vivès and F. Dufourt* **Imagined territorial communities on Twitter: A language-based approach** *with Andreas Jungherr* **Mixing apples and oranges: Conjoint Centrality and Positional Dominance** *with Ulrik Brandes, David Schoch*