

Michele Tizzani

CONTACTS

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LinkedIn

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ResearchGate

<https://www.researchgate.net/profile/Michele-Tizzani>

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@mictiz

SCHOLAR

Citations	265
H-index	4
i10-index	4

CURRENT POSITION

Postdoctoral researcher
ISI Foundation, Via
Chisola 5, Torino 10126
<https://www.isi.it>

SKILLS

Professional

Programming languages

- Python
{data : pandas, pyspark,
geopandas;
ML&NLP: scikit-learn,

PROFILE

I began my research journey focusing on theoretical work related to quantum gases. My focus later shifted to studying epidemics on temporal networks with mathematical and computer modeling. During my postdoc, I specialized in digital epidemiology and computational social science, utilizing non-conventional data sources (Twitter, Reddit Wikipedia, News) to study human behavior, specifically on topics such as influenza, vaccines, and COVID-19. Additionally, I explored the impact of non-pharmaceutical interventions during COVID-19 through surveys and contact matrices during the pandemic. Concurrently, I explored dynamical processes on higher order networks (hypergraph) from a theoretical perspective. Overall, my research interests is in human behaviour ranging from the microscopic scale of pairwise interactions to the macroscopic scale of group interactions.

EDUCATION

2019 - Ph.D.

Physics of Complex Systems - Università degli Studi di Parma

Thesis: Dynamical processes and memory effects on temporal networks.

Advisors: Prof. Raffaella Burioni

2015 - M.S.

Theoretical Physics - Università degli Studi di Roma Tor Vergata

Grade: 110/110

Thesis: The kinetic equation for the Bose-Einstein condensate in the limit of dilute gases.

Advisors: Prof. Rossana Marra

2012 - B.S.

Physics - Università degli Studi di Roma Tor Vergata

Thesis: The fluctuation and dissipation theorem for chaotic systems.

Advisors: Prof. Enrico Presutti

WORKING EXPERIENCE

- **2019 - Now:** Postdoc researcher at ISI Foundation
- **2013:** Internship LAPD - Aix-Marseille Université

TEACHING EXPERIENCE

spacy, nltk;
dataviz: matplotlib,
seaborn;
analysis&network:
scipy, networkx,
statsmodels, }

- R
- C++
- git
- hpc

Data collection/APIs

- Twitter API
- Wikipedia API
- NewsAPI
- GDELT
- Google Trends
- Google Cloud
- Facebook Ads

Modeling and Theory

- Network Science
- Dynamical systems
- Statistics
- Mathematical Modeling

Languages:

- Italian:
Primary
- English:
C1

Other certificates

- Pedagogical Training (600hours)

- 2023 · Lecturer for Analysis and Visualization of Complex Network - University of Turin
- 2018 · Tutoring activity in physics for Biotechnology - University of Parma
- 2018 · Mathematics and physics high school teacher - Convitto Maria Luigia, Parma
- 2017 · Physics Lab assistant - University of Parma
- 2017 · Teaching assistant in physics for Biotechnology - Università of Parma
- 2013 · Stage at LATP (Laboratoire d'Analyse, Topologies, Probabilités) at Aix- Marseille Université

TALKS AND POSTERS

- Poster section at Epidemics 2023, Bologna, Italy
- Speaker at IC2S2-2023, Copenhagen, Denmark
- Speaker at NetSci-2018, Paris, France
- Poster section XXII National Conferences on Statistical Physics and Complex Systems, Parma, Italy
- Poster section VIII GEFENOL Summer School on Statistical Physics of Complex Systems, Palma de Mallorca

COMMUNITY SERVICE

- Program Committee - Complex Networks Conference 2023
- Program Committee - NetSciX2024
- Reviewer:
 - PloS One
 - Journal of Medical Internet Research
 - Scientific Reports
 - The Web Conference
 - EPJ data science
 - NLP4IF
- Editor for Data&Policy special collection
- Programm commttee CCS

OUTREACH ACTIVITIES

- Researchers Night 2018 Università degli studi di Parma - Big data and transportation networks, a physicist perspective.
- Researchers Night 2017 Università degli studi di Parma - Networks and complexity
- Researchers Night 2016 Università degli studi di Parma - Networks and complexity

PROJECT INVOLVEMENT

- **EpiPose**, European Union founded project
(<https://cordis.europa.eu/project/id/101003688>)
- **VERDI**, European Union founded project
(<https://cordis.europa.eu/project/id/101045989/it>)

DATA EXPERTISE

Twitter API: Usage of Twitter streaming API to download and analyze data in 21 languages on Vaccination and COVID-19.

GDELT: Download and analyze News data from the Google Cloud platform to explore information exposure on multiple topics.

Wikipedia API: Experience with page-views data to explore information-seeking behavior on multiple topics, developing a method to differentiate country-based views instead of language-based views.

YouTube API: Experience with comments retrieval and analysis of YouTube data.

Contact Matrices: Explore the effectiveness of NPIs using age-specific contact patterns from survey data.

RESEARCH EXPERIENCE

| EPIDEMIOLOGY | ISI FOUNDATION

2022

Impact of tiered measures on social contact and mixing patterns in Italy during the second wave of COVID-19:

Evaluation of the impact of restrictions during COVID-19 in Italy using social contact matrices.

KEYWORDS: social contact patterns, COVID-19, NPIs

2020

Collective response to media coverage of the COVID-19 pandemic on Reddit and Wikipedia:

Exploration of the relationship between media coverage, public response, and the COVID-19 pandemic, finding that media coverage drives public attention and raises questions about the impact of attention saturation on collective awareness and behavioral change.

KEYWORDS: public attention, COVID-19, social media, mixed methods

2019

Analysis of digital sources for interventions on HIV

information policy: Data collection and analysis from digital sources (Twitter, Facebook, News) to assess HIV discussion in Italy and evaluate effective strategies of information

dissemination and prevention.

In collaboration with: DEP-Lazio (Department of Epidemiology of the Regional Health Service - Lazio)

KEYWORDS: NLP, Epidemiology

Gambling through the eyes of digital data with Facebook

Ads: Evaluation of the interest in gambling in Rome, Italy to compare and analyze data from the digital signal of the Facebook Ads platform to on-field studies on gambling addiction.

In collaboration with: DEP-Lazio (Department of Epidemiology of the Regional Health Service - Lazio)

KEYWORDS: geospatial data, epidemiology

| NETWORK SCIENCE | ISI FOUNDATION/PARMA UNIVERSITY

2021

Dynamical processes and stability analysis in hypergraphs:

Analytical framework supported by synthetic experiments for stability analysis of general processes on high-order structures.

KEYWORDS: mathematical modeling, phase transition, higher-order interactions, social contacts matrices

2018

Epidemic spreading and aging in temporal networks with

memory: Analysis of the effects of memory among individuals on the spreading of a disease using the activity-driven model.

KEYWORDS: mathematical modeling, phase transition, time-varying networks, epidemics

| COMPUTATIONAL SOCIAL SCIENCE | ISI FOUNDATION

2023

Global Misinformation Spillovers in the Vaccination Debate Before and During the COVID-19 Pandemic: Multilingual

Twitter Study: Exploration of the global network of anti-vaccination communities on Twitter, and the role that content moderation efforts by Twitter had worldwide in reducing the spread of vaccine-related misinformation.

KEYWORDS: Social network analysis; communities detection; expertise and authority discovery, Qualitative and quantitative studies of social media

2023

Political Issue or Public Health: the Vaccination Debate on Twitter in Europe:

Exploration of the relationship between the political interest of social media users and their exposure to vaccine-hesitant content on Twitter in 17 European countries, finding that users following right-wing or anti-EU politicians are more likely to encounter such content during the early months of the pandemic.

KEYWORDS: social network analysis, communities detection, qualitative and quantitative studies of social media

2022

Echoes through Time: Evolution of the Italian COVID-19

Vaccination Debate: Analysis of the evolution of the Italian discussion on vaccination during the COVID-19 pandemic, revealing a persistent divide between supporters and hesitant individuals on Twitter, despite some commonalities in their focus, and highlights the importance of ongoing surveillance to address vaccine-related concerns before official public health decisions are made.

KEYWORDS: Social network analysis; communities identification; expertise and authority discovery, Qualitative and quantitative studies of social media

EXTERNAL COLLABORATION

- World Food Program
- UNICEF
- WIKIPEDIA
- DEP-Lazio
- OECD

PUBLICATIONS

- Impact of food-related conflicts on self-reported food insecurity
S. Fiandrino, C. Dowd, G. Martini, Y. Mejova, E. Omodei, D. Paolotti, [M. Tizzani](#)
(2023) Impact of food-related conflicts on self-reported food insecurity. *Front. Sustain. Food Syst.* 7:1239992. doi: 10.3389/fsufs.2023.1239992
- Political Issue or Public Health: the Vaccination Debate on Twitter in Europe
P. Paoletti, L. Dall'Amico, K. Kalimeri, J. Lenti, Y. Mejova, D. Paolotti, M. Starnini, [M. Tizzani](#)
- Global Misinformation Spillovers in the Vaccination Debate Before and During the COVID-19 Pandemic: Multilingual Twitter Study
J. Lenti, Y. Mejova, K. Kalimeri, A. Panisson, D. Paolotti, [M. Tizzani](#), M. Starnini
JMIR Infodemiology 3:e44714 (2023), , doi: 10.2196/44714
- Impact of tiered measures on social contact and mixing patterns in Italy during the second wave of COVID-19
[M. Tizzani](#), A. De Gaetano, C. I. Jarvis, A. Gimma, K. Wong, W. J. Edmunds, P. Beutels, N. Hens, P. Coletti, D. Paolotti
BMC Public Health 23:906 (2023), doi:s12889-023-15846-x
- Echoes through Time: Evolution of the Italian COVID-19 Vaccination Debate
G. Crupi, Y. Mejova, [M. Tizzani](#), D. Paolotti, A. Panisson
Proceedings of the Sixteenth International AAAI Conference on Web and Social Media 16(1) (2022), doi:10.1609/icwsm.v16i1.19276

- Integrating digital and field surveillance as complementary efforts to manage epidemic diseases of livestock: African swine fever as a case study
M. Tizzani, V. Muñoz-Gómez, M. De Nardi, D. Paolotti, O. Muñoz, P. Ceschi, A. Viltrop, I. Capua
 PLOS One 16(12): e0252972 (2021), doi:[journal.pone.0252972](https://doi.org/10.1371/journal.pone.0252972)
- Phase transitions and stability of dynamical processes on hypergraphs
 G. Ferraz de Arruda, M. Tizzani, Y. Moreno
 Communications Physics 4, 24 (2021), doi:[10.1038/s42005-021-00525-3](https://doi.org/10.1038/s42005-021-00525-3)
- Collective Response to Media Coverage of the COVID-19 Pandemic on Reddit and Wikipedia: Mixed-Methods Analysis
 N. Gozzi, M. Tizzani, M. Starnini, F. Ciulla, D. Paolotti, A. Panisson, N. Perra
 Journal of Medical Internet Research 22 (10) (2020), doi:[10.2196/21597](https://doi.org/10.2196/21597)
- Epidemic spreading and aging in temporal networks with memory
M. Tizzani, S. Lenti, E. Ubaldi, A. Vezzani, C. Castellano, R. Burioni
 Physical Review E 98 (6), 062315, doi:[PhysRevE.98.062315](https://doi.org/10.1103/PhysRevE.98.062315)