

Niccolò Di Marco

WORK EXPERIENCE

University of Tuscia https://www.unitus.it/personale/docente/niccolo-di_marco/

City: Viterbo | **Country:** Italy | **Name of unit or department:** DIKE

[03/06/2025 - Current] **Assistant Professor (RtdA)**

Research topics:

- Network science
- Computational social science
- Complex systems
- Graph theory

University of Tuscia

City: Viterbo | **Country:** Italy

[10/04/2025 - 24/05/2025] **Lecturer**

Lecturer for the course "*Learning Resources: Educational Materials and Digital Environments*" within the "60-CFU Teacher Qualification Program".

UnitelmaSapienza University of Rome

City: Rome | **Country:** Italy

[02/2025 - Current] **Lecturer**

Lecturer of the course '*Analisi di reti sociali*' from the master '*Analisi e modellazione dei dati e dei processi: metodi e modelli - AMDP*'.

Sapienza University of Rome

City: Rome | **Country:** Italy

[01/11/2023 - 02/06/2025] **PostDoc**

I worked on the project "*Analysis of complex systems through data-driven models*", where I applied data-driven methodologies to investigate and model online social behaviour.

University of Florence

City: Florence | **Country:** Italy

[11/2019 - 31/12/2023] **Trainer**

Study assistance and support to students of degree courses in Mathematics, Chemistry, Biology, Physics, Geology and Computer Science.

EDUCATION & TRAINING

[01/11/2020 - 08/11/2023] **PhD in Mathematics**

University of Florence

Country: Italy | **Field(s) of study:** Discrete Mathematics, Complex Networks, Computational Social Sciences | **Thesis:** Reconstruction problems on graphs and discrete sets: theoretical results and algorithms

[2018 - 2020] **Master Degree in Mathematics**

University of Florence

Country: Italy | **Final grade:** 110 cum Laude

[10/2015 - 07/2018] **Bachelor Degree In Mathematics**

University of Siena

Country: Italy | **Final grade:** 110 cum Laude

[2010 - 2015] **High-School Diploma**

Istituto di Istruzione Superiore Tito Sarrocchi

<https://www.sarrocchi.edu.it/wp/la-scuola/>

Country: Italy | **Final grade:** 100/100

[25/09/2022 - 30/09/2022] **NetHike 2022**

Eidgenössische Technische Hochschule Zürich <https://sn.ethz.ch/nethike.html>

The school focused on how to describe, interpret and test hypotheses on network data.

[25/07/2022 - 05/08/2022] **Mathematics of Machine Learning Summer School**

Istituto Nazionale Alta Matematica "Francesco Severi"

<https://www.smi-math.unipr.it/past-courses/cortona/summer-graduate-school-mathematics-of-machine-learning/103/>

During the school I attended the following courses on the theoretical aspects of Machine Learning and Deep Learning:

- Convex Optimization (Nicolas Flammarion, Ecole polytechnique fédérale de Lausanne);
- Statistical Learning Theory (Rob Schapire, Microsoft Research NYC lab);
- Deep Learning (Joan Bruna, Courant Institute and the Center for Data Science);
- Online Learning (Nicolò Cesa-Bianchi, Università degli Studi di Milano);
- Reinforcement Learning (Emma Brunskill, Stanford University).

[22/07/2019 - 16/08/2019] **Scuola Matematica Universitaria 2019**

University of Perugia

<https://www.smi-math.unipr.it/past-courses/perugia/summer-school-smi-2019/61/>

During the school, I attended these courses:

- Differential Geometry, held by Prof. Liviu Ornea (University of Bucharest). The program covered an introduction to modern Differential Geometry;
- Numerical Analysis, held by Michele Benzi (Scuola Normale Superiore). The program covered an introduction to Complex Networks using Numerical Analysis.

[10/06/2019 - 14/06/2019] **UCM XIII Modelling Week**

Universidad Complutense de Madrid

https://www.mat.ucm.es/congresos/mweek/XVI_Modelling_Week/index.htm

During the week I participated in a project entitled "Deep Learning based Architectures for Real-Time Facial Analysis".

[09/2014 - 10/2014] **Leonardo Project**

University of Bangor <https://www.bangor.ac.uk/>

During the period spent in the United Kingdom, I worked at Bangor University as a

chemical analyst.

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING: C1 **READING:** C1 **WRITING:** C1

SPOKEN PRODUCTION: C1 **SPOKEN INTERACTION:** C1

SKILLS

Programming

Matlab | R | Python

Data Analysis and Visualization

iGraph (R) | data.table (R) | ggplot2 (R) | dplyr (R) | Seaborn (Python) | Matplotlib (Python) | Numpy (Python) | Pandas (Python)

Common Softwares

Latex | Microsoft Office package: Microsoft Word, Excel, PowerPoint, Access

CONFERENCES & SEMINARS

[28/06/2025 - 28/06/2025]

TEDx Brescia 2025 Brescia

I was an invited speaker at TEDx Brescia 2025.

My talk explored key aspects of my research, including complex systems, data science, and their applications to social dynamics.

Link: <https://www.tedxbrescia.it/>

[23/06/2025 - 27/06/2025]

Complexity72h Madrid

I served as one of the tutors for the workshop, leading the project "*Decoding the Language of Influence: Complexity and Engagement in Social Media*".

As an outcome of the event, we published the preprint "*Involvement drives complexity of language in online debates*" (<https://arxiv.org/abs/2506.22098>)

Link: <https://complexity72h.com>

[02/06/2025 - 06/06/2025]

NETSCI2025 Maastricht

I presented a work entitled "*Decoding musical evolution through network science*".

Link: <https://netsci2025.github.io/>

[05/05/2025 - 07/05/2025]

TAIR2025 Milan

I was an invited speaker to the conference. I presented a work entitled "*Maximizing influence in network structures*".

Link: <https://www.mate.polimi.it/events/TAIR2025/>

[15/04/2024 - 18/04/2024]

DGMM 2024 Florence

Member of the Organizing Committees.

Link: <https://dgmm2024.dimai.unifi.it/>

[07/06/2023 - 10/06/2023]

IWOCA 2023 Tainan

I presented a work entitled "*Minimum surgical probing with convexity constraints*".

Link: <https://iwoca2023.csie.ncku.edu.tw/>

- [24/10/2022 - 27/10/2022] **DGMM 2022** Strasbourg
- I presented a work entitled "*Properties of SAT formulas characterizing convex sets with given projection*".
- Link:** <https://dgmm2022.sciencesconf.org/>
- [13/06/2022 - 15/06/2022] **IWCIA 2022** Messina
- I presented a work entitled "*The generalized microscopic image reconstruction problem for hypergraphs*".
- Link:** <https://www.iwcia2022.org/>
- [02/05/2022 - 04/05/2022] **TAIR 2022** Milan
- I was an invited speaker to the conference. I presented a work entitled "*The null label problem and the reconstruction of the 2-intersection graph*".
- Link:** <https://www.mate.polimi.it/events/TAIR2022/?cn-reloaded=1>
- [14/12/2021 - 17/12/2021] **WI-IAT 2021** Melbourne
- I presented a work entitled "*How virtual reality influenced emotional well-being worldwide during the Covid-19 pandemics*".
- Link:** <https://www.wi-iat.com/wi-iat2021/>
- [05/07/2021 - 07/07/2021] **IWOCA 2021** Ottawa
- I presented a work entitled "*A study on the existence of null label for 3-hypergraphs*".
- Link:** <https://iwoca2021.eecs.uottawa.ca/>

PUBLICATIONS

- [2025] [**Post-hoc Evaluation of Nodes Influence in Information Cascades: The Case of CoordinatedAccounts**](#)
- Reference:** ACM Transactions on the Web
- [2025] [**Decoding Political Polarization in Social Media Interactions**](#)
- Reference:** Complex Networks & Their Applications XIII
- [2025] [**Evaluating the effect of viral posts on social media engagement**](#)
- Reference:** Scientific Reports
- [2025] [**Mapping the global election landscape on social media in 2024**](#)
- Reference:** Plos One
- [2024] [**Persistent interaction patterns across social media platforms and over time**](#)
- Reference:** Nature
- [2024] [**The drivers of global news spreading patterns**](#)
- Reference:** Scientific Reports
- [2024] [**User Volatility on Reddit and Voat**](#)
- Reference:** IEEE Transactions on Computational Social Systems
- [2024] [**A Topology-Based Approach for Predicting Toxic Outcomes on Twitter and YouTube**](#)
- Reference:** IEEE Transactions on Network Science and Engineering
- [2024]

The complexity of 2-intersection graphs of 3-hypergraphs recognition for claw-free graphs and triangulated claw-free graphs

Reference: Discrete Applied Mathematics

[2024] **Patterns of linguistic simplification on social media platforms over time**

Reference: Proceedings of the National Academy of Sciences

[2023] **Characterizing engagement dynamics across topics on Facebook**

Reference: Plos one

[2023] **MINIMUM SURGICAL PROBING with Convexity Constraints**

Reference: International Workshop on Combinatorial Algorithms

[2023] **The Generalized Microscopic Image Reconstruction Problem for Hypergraphs**

Reference: International Workshop on Combinatorial Image Analysis

[2023] **A study on the predictive strength of fractal dimension of white and grey matter on MRI images in Alzheimer's disease**

Reference: Annals of Mathematics and Artificial Intelligence

[2022] **Structure and Complexity of 2-Intersection Graphs of 3-Hypergraphs**

Reference: Algorithmica

[2022] **Growing polarization around climate change on social media**

Reference: Nature Climate Change

[2022] **Properties of SAT Formulas Characterizing Convex Sets with Given Projections**

Reference: International Conference on Discrete Geometry and Mathematical Morphology

[2022] **Conspiracy theories and social media platforms**

Reference: Current Opinion in Psychology

[2022] **Reliability of Content and Echo Chambers on YouTube during the COVID-19 Debate**

Reference: 18th International AAAI Conference on Web and Social Media

[2021] **How Virtual Reality Influenced Emotional Well-being Worldwide During the Covid-19 Pandemics**

Reference: IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology

[2021] **Virtual Reality for Enhancement of Emotional Mindset in the First Lockdown of United Kingdom for the Covid-19 Pandemics**

Reference: International Conference on Brain Informatics

[2021] **A Study on the Existence of Null Labelling for 3-Hypergraphs**

Reference: IWOCA 2021

HONOURS AND AWARDS

[31/12/2022] **Best Paper for PhD student Award** Awarding institution: IEEE/ACM/WIC Web Intelligence conference

NETWORKS AND MEMBERSHIPS

[2022 - Current] **IRIS Accademic Research Group**

Link: <https://www.irisacademic.org/>