

Gabriele Tolomei, Ph.D.

Associate Professor of Computer Science

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EDUCATION

Ph.D. in Computer Science Ca' Foscari University of Venice, Italy <i>Awarded:</i> 17 November 2011	01/2008 – 11/2011
M.Sc. in Computer Science (<i>summa cum laude</i>) University of Pisa, Italy <i>Awarded:</i> 21 April 2005	10/2002 – 04/2005
B.Sc. in Computer Science University of Pisa, Italy <i>Awarded:</i> 18 October 2002	09/1999 – 10/2002

NATIONAL SCIENTIFIC QUALIFICATION (ASN) — FULL PROFESSOR

SC 01/B1 – Informatica GSD 01/INFO-01 – Informatica	Since: 21 July 2023
SC 09/H1 – Sistemi di Elaborazione delle Informazioni GSD ING-INF/05	Since: 14 July 2025

RESEARCH EXPERIENCE

Associate Professor Department of Computer Science, Sapienza University of Rome, Italy Head of the H uman- E xplainable, R obust, and C ollaborative L earning Lab (HERCOLE Lab)	09/2019 – present
Assistant Professor Department of Mathematics, University of Padua, Italy	07/2017 – 08/2019
Research Scientist Yahoo Labs, London, UK	06/2014 – 07/2017

SELECTED PUBLICATIONS

Journal Publications

- Tolomei, G., Antonelli, L., Bassetti, E., and Panizzi, E. *What Course Should I Enroll In Next? Guiding Students Toward Academic Success with Sequential Recommendations*. *ACM Transactions on Recommender Systems (to appear)* [**IF = 1.540**].
- Chen, Z., Huang, J., Silvestri, F., Zhang, Y., Ahn, H., and Tolomei, G. *Joint Factual and Counterfactual Explanations for Top-k GNN-based Recommendations*. *ACM Transactions on Recommender Systems*, 4(2), Art. 26, pp. 1–26 (2026) [**IF = 1.540**].

- Gabrielli, E., Belli, D., Matrullo, Z., Miori, V., and Tolomei, G. *Securing Federated Learning Against Extreme Model Poisoning Attacks via Multidimensional Time Series Anomaly Detection on Local Updates*. *IEEE Transactions on Information Forensics and Security*, 20, pp. 9610–9624 (2025) [IF = 2.135].
- Movin, M., Siciliano, F., Ferreira, R., Silvestri, F., and Tolomei, G. *Consistent Counterfactual Explanations via Anomaly Control and Data Coherence*. *IEEE Transactions on Artificial Intelligence*, Vol. 6, No. 4, pp. 794–804 (2025) [IF = 4.273].
- Trappolini, G., Maiorca, V., Severino, S., Rodolà, E., Silvestri, F., and Tolomei, G. *Sparse Vicious Attacks on Graph Neural Networks*. *IEEE Transactions on Artificial Intelligence*, Vol. 5, No. 5, pp. 2293–2303 (2024) [IF = 4.273].
- Chen, Z., Silvestri, F., Tolomei, G., Wang, J., Zhu, H., and Ahn, H. *Explain the Explainer: Interpreting Model-Agnostic Counterfactual Explanations of a Deep Reinforcement Learning Agent*. *IEEE Transactions on Artificial Intelligence*, Vol. 5, No. 4, pp. 1443–1457 (2024) [IF = 4.273].
- Tolomei, G. and Silvestri, F. *Generating Actionable Interpretations from Ensembles of Decision Trees*. *IEEE Transactions on Knowledge and Data Engineering*, Vol. 33, No. 4, pp. 1540–1553 (2021) [IF = 6.093].
- Calzavara, S., Conti, M., Focardi, R., Rabitti, A., and Tolomei, G. *Machine Learning for Web Vulnerability Detection: The Case of Cross-Site Request Forgery*. *IEEE Security & Privacy*, 18(3): 8–16 (2020) [IF = 2.376].
- Aksu, H., Babun, L., Conti, M., Tolomei, G., and Uluagac, A. S. *Advertising in the IoT Era: Vision and Challenges*. *IEEE Communication Magazine*, Vol. 56, No. 11, pp. 138–144 (2018) [IF = 9.002].
- Lucchese, C., Orlando, S., Perego, R., Silvestri, F., and Tolomei, G. *Discovering Tasks from Search Engine Query Logs*. *ACM Transactions on Information Systems*, Vol. 31, No. 3, pp. 1–43 (2013) [IF = 6.063; ACM 2013 Computing Reviews Notable Article¹]

Conference Publications

- Giorgi, F., Veglianti, F., Silvestri, F., and Tolomei, G. *Countering Overfitting with Counterfactual Examples*. In *Proc. ACM KDD 2026 (to appear)* [rank = A*].
- Vineis, V. and Tolomei, G. *From Engagement to Empowerment: A Capability-Theoretic Rethinking of Recommender Systems*. In *Proc. ECIR 2026*, pp. 352–368 [rank = A].
- Chen, Z., Cheng, J., Amiri, H., Nag, K., Lin, L., Liu, S., Tolomei, G., and Sun, X. *FROG: Fair Removal on Graph*. In *Proc. ACM CIKM 2025*, pp. 415–424 [rank = A].
- Giorgi, F., Campagnano, C., Silvestri, F., and Tolomei, G. *Natural Language Counterfactual Explanations for Graphs Using Large Language Models*. In *Proc. AISTATS 2025*, PMLR 258:3565–3573 [rank = A].
- Bernini, A., Silvestri, F., and Tolomei, G. *Evading Community Detection via Counterfactual Neighborhood Search*. In *Proc. ACM KDD 2024*, pp. 131–140 [rank = A*].
- Chen, Z., Silvestri, F., Wang, J., Zhang, Y., and Tolomei, G. *The Dark Side of Explanations: Poisoning Recommender Systems with Counterfactual Examples*. In *Proc. ACM SIGIR 2023*, pp. 2426–2430 [rank = A*].
- Chen, Z., Silvestri, F., Wang, J., Zhu, H., Ahn, H., and Tolomei, G. *ReLAX: Reinforcement Learning Agent Explainer for Arbitrary Predictive Models*. In *Proc. ACM CIKM 2022*, pp. 252–261 [rank = A].
- Lucic, A., ter Hoeve, M., Tolomei, G., de Rijke, M., and Silvestri, F. *CF-GNNExplainer: Counterfactual Explanations for Graph Neural Networks*. In *Proc. AISTATS 2022*, PMLR 151:4499–4511 [rank = A].
- Tolomei, G., Silvestri, F., Haines, A., and Lalmas, M. *Interpretable Predictions of Tree-based Ensembles via Actionable Feature Tweaking*. In *Proc. ACM KDD 2017*, pp. 465–474 [rank = A*].
- Lucchese, C., Orlando, S., Perego, R., Silvestri, F., and Tolomei, G. *Identifying Task-based Sessions in Search Engine Query Logs*. In *Proc. ACM WSDM 2011*, pp. 277–286 [rank = A; best paper runner-up].

¹http://www.computingreviews.com/recommend/bestof/notableitems_2013.cfm

TALKS

- Invited Speaker** 28 May 2024
Title: “Robust Federated Learning: A Journey into Popular Attacks and Defenses”
Workshop on “Machine Learning for Data Science and Algorithm-Sharing in Social Science”
IMT Lucca, Lucca, Italy
[ML-DAS Workshop 2024](#)
- Invited Speaker** 12 January 2024
Title: “Counterfactual Explanations for Machine Learning”
Workshop on “Machine Teaching for Human (MT4H)”
DSIC-VRAIN, Universitat Politècnica de València, Valencia, Spain
[MT4H International Workshop 2024](#)
- Keynote Speaker** 6 December 2016
Title: “A Taste of Machine Learning”
Yahoo Tech Pulse 2016 Conference
Santa Clara, CA, USA

EVENT ORGANIZATION

- Doctoral Consortium Chair** 2025
European Conference on Information Retrieval (ECIR 2025)
[ECIR 2025](#)
- Workshop Co-Chair** 2025
1st International Workshop on Explainable AI and Knowledge Graphs (XAI+KG)
Co-located at the 22nd Extended Semantic Web Conference (ESWC 2025)
[ESWC 2025](#)
- Workshop Co-Chair** 2023
Workshop on Federated Learning for Information ReTrieval (FLIRT)
Co-located at the 46th ACM SIGIR Conference
[FLIRT 2023](#)
- Workshop Chair** 2022
Workshop on Federated Learning for Private Web Search and Data Mining (FL4P-WSDM)
Co-located at the 15th ACM WSDM Conference
[FL4P-WSDM 2022](#)
- Executive Director** 2019
International Summer School on Machine Learning and Security
[ML & Security School 2019](#)
- General Program Chair** 2017
IEEE Security and Privacy in Digital Advertising Workshop (IEEE CNS SPA 2017)
Co-located at the 2017 IEEE Conference on Communications and Network Security
[IEEE CNS SPA 2017](#)
- Program Co-Chair** 2017–2018
IEEE Cyber-Physical Systems Security Workshop (IEEE CNS CPS-Sec 2017–2018)
Co-located at the IEEE Conference on Communications and Network Security
[IEEE CNS CPS-Sec 2017–2018](#)

EDITORIAL ACTIVITIES

Editorial Board Membership: Associate Editor for the [ACM Transactions on Knowledge Discovery from Data \(TKDD\)](#) and the [Journal of The Franklin Institute](#).

Regular Reviewer for the following journals: IEEE TKDE, ACM TKDD, ACM TOIS, and ACM TWEB.

Program Committee Membership (most relevant conferences): IJCNN 2025–26 (Area Chair); CIKM 2021–26 (Senior PC); ECAI 2024–25 (Senior PC); SIGIR 2024–26 (Senior PC); TheWebConf 2022 (Senior PC); AAAI, KDD, IJCAI, ICML, NeurIPS (PC member).

TEACHING

Big Data Computing [30 hours] M.Sc. in Computer Science (2nd year, 1st semester) Sapienza University of Rome, Italy	2023–25
Big Data Computing [60 hours] M.Sc. in Computer Science (2nd year, 2nd semester) Sapienza University of Rome, Italy	2020–23
Theory of Algorithms [48 hours] M.Sc. in Applied Mathematics (1st year, 2nd semester) Sapienza University of Rome, Italy	2021
Systems and Networking (Unit I) [60 hours] B.Sc. in Applied Computer Science and Artificial Intelligence (2nd year, 1st semester) Sapienza University of Rome, Italy	2021–25
Operating Systems [60 hours] B.Sc. in Computer Science (2nd year, 1st semester) Sapienza University of Rome, Italy	2019–2025
Python Programming for Data Science [40 hours] (within Fundamentals of Information Systems) M.Sc. in Data Science (1st year, 1st semester) University of Padua, Italy	2018–19
Introduction to Computer Programming [32 hours] B.Sc. in Computer Science (1st year) University of Padua, Italy	2018–19
Python Programming for Data Science [44 hours] (within Fundamentals of Information Systems) M.Sc. in Data Science (1st year, 1st semester) University of Padua, Italy	2017–18
Introduction to Computer Programming [32 hours] B.Sc. in Computer Science (1st year) University of Padua, Italy	2017–18

STUDENT SUPERVISION

Advisor of **7** Ph.D. students. Supervised the work of **32** M.Sc. and **30** B.Sc. students.

MAIN RESEARCH FUNDING

- Sapienza University Research Projects (PI)** 01/2025 – 12/2027
Project: GHOST – Protecting User Privacy from Community Detection in Social Networks
Funding: € 49,800
- Italian MUR – PRIN (Co-PI)** 09/2023 – 08/2025
Project: Hybrid Prediction and Explanation with Knowledge Graphs (HypeKG)
Funding: € 42,773
- Italian MUR – PNRR, SERICS (WP Leader)** 01/2023 – 12/2025
Project: Spoke 9 – Securing Digital Transformation: Smart Decentralized Finance (SmartDeFi)

TECHNOLOGY TRANSFER

Academic Startup

- Co-founder and Chief Scientific Officer — tellmewAI S.r.l.** 12/2025 – present
Sapienza University of Rome
SaaS compliance automation platform supporting organizations in aligning their artificial intelligence systems with the EU AI Act throughout their entire lifecycle. Clients include companies and public administrations seeking to achieve AI regulatory compliance without investing in in-house legal and technical expertise.
www.tellmewai.com

Patents

- Patent US20170004541A1 (Co-Inventor)**
Title: “Method and system for analyzing user behavior associated with web contents.”
patents.google.com/patent/US20170004541A1
- Patent US11157967B2 (Co-Inventor)**
Title: “Method and system for providing content supply adjustment.”
patents.google.com/patent/US11157967B2
- Patent US10755303B2 (Co-Inventor)**
Title: “Generating actionable suggestions for improving user engagement with online advertisements.”
patents.google.com/patent/US10755303B2
- Patent US11157836B2 (Co-Inventor)**
Title: “Changing machine learning classification of digital content.”
patents.google.com/patent/US11157836B2