

Curriculum Vitæ et Studiorum

Francesco Gullo



Date and Place of Birth: March 17, 1982 — Cosenza, Italy
Citizenship: Italian
Languages: Italian (native), English (fluent), Spanish (conversant/proficient)
Address: UniCredit, Via Molfetta, 101, 00171 Rome - Italy (*office*)
E-mail: gullof@acm.org
ORCID: 0000-0002-7052-1114
Web: <https://fgullo.github.io/>
[LinkedIn](#) [ResearchGate](#) [Google Scholar](#)
[Scopus](#) [GitHub](#) [Semantic Scholar](#)

SHORT BIO

Francesco Gullo is a *senior associate researcher* at the *UniCredit* banking group. He joined UniCredit in 2015, and, since then, he has been part of departments/units focusing on research and development in the areas of artificial intelligence and data science: the “*R & D*” department first (for 5 years), the “*Applied Research & Innovation*” unit of the “*AI, Data & Analytics ICT*” department then (for 2 years), and the “*Data & Innovation*” unit of the “*Data Science & AI*” department now (since September 2022). He received his PhD, in “*Computer and Systems Engineering*”, from the *University of Calabria* (Italy), in 2010. During his PhD, he was an *intern* at the *George Mason University* (US), and a teaching/research assistant at the *University of Catanzaro* (Italy). After his graduation, he was a *postdoc* at the *University of Calabria* (Italy), a *postdoc* and a *research scientist* at the *Yahoo Labs* (Spain), and a *research scientist* at the *Fundació Barcelona Media* (Spain).

His research falls into the broad areas of *artificial intelligence* and *data science*, with emphasis on *algorithmic* aspects, i.e., on formulating novel problems, theoretically characterizing them, and designing/analyzing algorithms. His recent interests include *graph mining and learning*, *natural language processing*, and *trustworthy AI*. He has been practicing both *fundamental research* (with ~ 90 publications, mostly in premier venues such as SIGMOD, VLDB, KDD, ICDM, CIKM, EDBT, WSDM, ECML-PKDD, SDM, TODS, TKDE, TKDD, MACH, DAML, JCSS, TNSE, PR), and *applied research* (with a 12-year work experience in industrial-research environments).

He has also been actively serving the scientific community: he was/is/will be Finance Chair of CIKM’24, Workshop Chair of ICDM’16, Program co-Chair of MIDAS workshop @ECML-PKDD[’16-’23], MultiClust symposium @SDM’14, MultiClust workshop @KDD’13, 3Clust workshop @PAKDD’12, as well as (senior) program-committee member of major conferences, including SIGMOD, KDD, WWW, IJCAI, AAAI, CIKM, SIGIR, ICDM, WSDM, SDM, ECML-PKDD, ECAI, ICWSM.

CV IN A NUTSHELL

ACADEMIA

- Italian National Scientific Habilitation (**ASN**), *Associate Professor* (“*II fascia*”), Sectors 01/B1 and 09/H1, since 2018 (valid until 2027).
- **Indicators** (“*mediane*”) satisfied for **ASN** as a **Full Professor** (“*I fascia*”), for both Sectors 01/B1 and 09/H1.
- 18-year experience in ***fundamental research*** in *artificial intelligence* and *data science*, with focus on *algorithmic* aspects, and recent interests including *graph learning and mining*, *natural language processing*, *trustworthy AI*.
- Co-author of ~ 90 **publications**, most of them in *premier* journals (TODS, PVLDB, TKDE, TKDD, MACH, DAMI, JCSS, TNSE, PR) and conferences (SIGMOD, VLDB, KDD, ICDM, CIKM, EDBT, WSDM, ECML-PKDD, SDM).
- **H-index**: 27; Total number of **citations**: 2 169 (source: Google Scholar, Apr 23rd, 2023).
- **Top-2% Most Cited Scientist** in 2022, according to Stanford University’s standardized citation indicators.
- Recipient of the **best paper award** for the *BDTA’16 conference*.
- Wide network of (**international**) **collaborations**. Excluding editorship publications: **72 co-authors** (source: dblp.org, Apr 23rd, 2023), from Italian (Sapienza Univ., SNS, Unina, UniTrento, Uniba, Unical, Unicz, ISI Found, ENEA), US (Stanford Univ., CMU, NYU, Brown Univ., Boston Univ., USC, GMU, Boise State Univ.), and rest-of-the-world (ETH HKUST, HKU, NTU, Telecom Paristech, Aalto Univ., Aarhus Univ., AUEB) institutions; $\sim 70\%$ **publications** with at least one co-author from a different institution.
- Numerous **teaching activities**, carried out in both *academia* and *industry*.
- **External Scientific Board Member** of the *ICT PhD Program* of the *University of Calabria*, since 2017.
- **UniCredit Scientific co-Referent** for the *Industrial Liason Program (ILP)* of Sapienza University, since 2016.
- 30+ **B.Sc./M.Sc./Ph.D. theses** and **internships** (co-)supervised.
- Consolidated experience with **externally-funded cooperative projects**, both *national* and *European*.

SCIENTIFIC COMMUNITY SERVICE

- **Finance Chair** (role *equivalent to General Chair*) of the *CIKM ‘24* conference.
- **Workshop co-Chair** of the *ICDM ‘16* conference.
- **Program co-Chair** of several workshops/symposia/special sessions, including the well-established *MIDAS workshop* @ECML-PKDD conference, now in its *8th edition*.
- Stably part of the **program committee** of major conferences, including SIGMOD, KDD, WWW, IJCAI, AAAI, CIKM, SIGIR, ICDM, WSDM, SDM, ECML-PKDD, ECAI, ICWSM.
- **Guest Editor** of *ECML-PKDD Journal Track*; **Associate Editor** of *Frontiers in Big Data* journal; **Distinguished Reviewer Board member** of *TWEB* journal.
- **Appointed Evaluator** of several *cooperative project proposals*, funded by entities like the **European Commission** and the *Austrian Research Promotion Agency (FFG)*.
- **Best/outstanding reviewer award** for **ECML-PKDD 2021** and **WWW 2017** conferences.

INDUSTRY

- 12-year experience in *industrial-research* R&D labs (**Yahoo! Labs**, **Fundació Barcelona Media**, **UniCredit**), closely interacting with industrial partners to make **fundamental research** impactful in an **industry setting**.
- Long-established portfolio of **industrial-research projects**, carried out until either a *proof-of-concept* or a *production-ready* stage, with focus on high *return on investment (ROI)* from different perspectives, including improved customer satisfaction/engagement, office automation, process optimization, decision support, cost saving.
- Co-inventor of 2 **patents** and co-author of 2 **defensive publications**.
- **Recipient** of the **ABI IT Innovation Award 2018** (“*Premio Innovazione IT – Tecnologie Disruptive*”).
- Skilled in a high number of **technologies**, spanning domains such as *general-purpose/domain-specific programming languages*, *versioning*, *build-automation*, *databases*, *virtualization*, *cloud computing*, *machine-learning frameworks*, *distributed computing*, *stream processing*, *search engines*, *web applications*, etc.

WORK EXPERIENCE (APPOINTMENTS)

[Sep'22 – present]	Researcher (senior associate) UniCredit banking group, UniCredit (holding) company “Data Science & AI” department “Data Innovation” unit Rome, Italy	Design and implementation of cutting-edge, research-driven ICT solutions that are of interest to the banking industry. Main responsibilities: <ul style="list-style-type: none"> • Business-driven, mid/short-term applied research • Fundamental/applied research with longer-term “transversal” applicability in multiple contexts • “Quasi-production”-stage prototyping (i.e., development of SW prototypes that are mature enough to be industrialized with minimal effort) • Supervising interns • Impact on the scientific community (papers, open-source SW libraries, collaboration with universities and research institutes, PC committees and editorial boards, organization of scientific events)
[Jul'20 – Aug'22]	Researcher (senior associate) UniCredit banking group UniCredit Services (controlled) company “AI, Data & Analytics ICT” department “Applied Research & Innovation” (ARI) unit Rome, Italy	
[Jul'15 – Jun'20]	Researcher (associate) UniCredit banking group, UniCredit (holding) company “Research & Development” (R&D) department Rome, Italy	
[Mar'15 – Jun'15]	Research Scientist Fundació Barcelona Media (now part of Eurecat) Barcelona, Spain	Carrying out fundamental and applied research that is impactful for company's business needs. Main responsibilities: <ul style="list-style-type: none"> • Fundamental/applied research research with longer-term “transversal” applicability in multiple contexts • Business-driven, mid/short-term applied research, with the main goal of developing SW prototypes out of the conducted research, and interacting with production teams of the company to help industrialize them • Supervising interns • Getting patents out of the conducted research • Participation to externally-funded research/innovation cooperative projects (both in the proposal-writing phase and in carrying out the projects' research activities) • Impact on the scientific community (papers, collaboration with universities and research institutes, PC committees and editorial boards, organization of scientific events)
[Sep'13 – Feb'15]	Research Scientist Yahoo Labs “Web Mining” group Barcelona, Spain	
[Sep'11 – Aug'13]	Postdoctoral Researcher Yahoo Labs “Web Mining” group Barcelona, Spain	
[Jan'10 – Aug'11]	Postdoctoral Researcher University of Calabria DEIS (now DIMES) department Cosenza, Italy	
[Apr'09 – Sep'09]	Short-term Visiting Scholar George Mason University “Data Mining & Machine Learning” group headed by Prof. Carlotta Domeniconi Fairfax, VA – USA	Carrying out fundamental research with the main goal of publishing papers; taking care of the experimental evaluation to support the conducted research; getting involved into teaching activities; helping in the supervision of students; participation to externally-funded research/innovation cooperative projects; participation to program committees of conferences; helping in the organization of scientific events.
[Jan'06 – Aug'11]	Research & Teaching Assistant University of Calabria DEIS (now DIMES) department Cosenza, Italy	
[Jan'06 – Aug'11]	Research & Teaching Assistant “Magna Græcia” University of Catanzaro Department of Medicine and Surgery Catanzaro, Italy	

EDUCATION

- [Jan'10] **Ph.D.** in Computer and Systems Engineering [*with highest honors*]
University of Calabria, Italy
Thesis: *Overcoming Uncertainty and the Curse of Dimensionality in Data Clustering*
Advisor: prof. Sergio Greco
- [Dec'05] **M.Sc.** in Computer Engineering [*with highest honors*]
University of Calabria, Italy
Thesis: *Querying and Repairing Inconsistent XML Databases*
Advisor: prof. Sergio Greco
- [Oct'03] **B.Sc.** in Computer Engineering [*with highest honors*]
University of Calabria, Italy
Thesis: *Semistructured Data and XML*
Advisor: prof. Sergio Greco

RESEARCH ACTIVITY

His research falls into the broad areas of *artificial intelligence* and *data science*, with special emphasis on *algorithmic* aspects, i.e., on *formulating, theoretically characterizing, and designing effective yet efficient algorithms* for (novel) problems that are useful to gain insights/information/knowledge from data.

As far as data types, special emphasis has been given to *graphs, text, and temporal data*, but he has also dealt with tabular data, probabilistic data, and semistructured data. *Large-scale data processing* and *combinatorial optimization* are frequently-occurring keywords in his work.

More specifically, his recent research interests include:

- Graph learning [1, 2]
 - graph representation learning; graph neural networks; machine/graph learning for combinatorial optimization; deep/reinforcement learning paradigms for graph clustering; knowledge graphs; graph classification;
- Combinatorial optimization on graphs [3, 8, 9, 14, 16, 26, 27, 28, 31, 32, 35, 36, 37, 40, 41, 42, 43, 45, 46, 71, 81]
 - dense-subgraph discovery; graph summarization; reachability/distance queries on graphs; graph pattern mining; graph clustering; querying graph databases; link prediction;
- Natural Language Processing (NLP) [5, 33, 70, 73]
 - large language models; natural language generation; question answering; word embeddings; text classification; information extraction from text; sentiment analysis/transfer; text summarization; entity recognition and disambiguation;
- Ethics and trustworthiness in data management and AI (algorithmic fairness, explainable AI, interpretability, transparency, privacy, responsible AI, sustainable AI) [69]
- AI in finance [4, 30]

Other topics/problems he has focused on in the past include (*social*) *Web mining* (e.g., discovering polarized communities, social-network analysis, information propagation in online services, community search/detection, social-influence analysis, personalization of online services) [6, 10, 12, 15, 29, 34, 38, 44, 46, 75, 82, 84], *mining high-dimensional/multifaceted data* (i.e., projective/subspace clustering, clustering ensembles, projective clustering ensembles) [13, 18, 20, 47, 48, 50, 51, 52, 65, 74, 83], *clustering uncertain data* [11, 19, 21, 39, 49, 53, 72, 78, 87, 88], *time-series data management* [24, 76, 89], *bioinformatics* [22, 25, 77, 79, 80], *XML data management* [23, 68, 86].

SCIENTIFIC COMMUNITY SERVICE

ORGANIZATION **Finance Chair**

32nd ACM International Conference on Information and Knowledge Management (CIKM '24)

Workshop co-Chair

16th IEEE International Conference on Data Mining (ICDM '16)

Program co-Chair

[1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th] Workshop on Mining Data for financial applications (MIDAS ['16, '17, '18, '19, '20, '21, '22, '23])

In conjunction with the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery (ECML-PKDD ['16, '17, '18, '19, '20, '21, '22, '23])

Industrial Session co-Chair

[2nd, 3rd] International Conference on Machine Learning, Optimization and Big Data (MOD ['16, '17])

Program co-Chair

Mini-Symposium on Multiple Clusterings, Multi-view Data, and Multi-source Knowledge-driven Clustering (MultiClust '14)

In conjunction with the 2014 SIAM Int. Conf. on Data Mining (SDM '14)

Program co-Chair

4th MultiClust Workshop: Multiple Clusterings, Multi-view Data, and Multi-source Knowledge-driven Clustering

In conjunction with the 19th ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (KDD '13)

Program co-Chair

1st International Workshop on Multi-view data, High-dimensionality, External Knowledge: Striving for a Unified Approach to Clustering (3Clust '12)

In conjunction with the 16th Pacific-Asia Conf. on Knowledge Discovery and Data Mining (PAKDD '12)

EDITORIAL BOARDS

Guest Editor

Journal Track of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD JT)
[2020–2023]

Associate Editor

Frontiers in Big Data journal
Data mining and Management section

OTHER BOARDS

Distinguished Reviewer Board member

ACM Transactions on the Web (TWEB)
Appointed for [2022–2024]

Scientific Committee member

“Data Science for Economics and Finance: Methodologies and Applications” book
Editors: S. Consoli, D. Reforgiato Recupero, M. Salsana. Publisher: Springer Nature.
[2020]

PROGRAM COMMITTEES (MAJOR CONFERENCES)

ACM SIGMOD International Conference on Management of Data (SIGMOD)
(research track) [2022, 2024]

ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (KDD)
(research track) [2014–2023]

International World Wide Web Conference (WWW)
(social network analysis and graph algorithms track) [2014, 2016–2023]

IEEE International Conference on Data Mining (ICDM)
[2014–2016, 2018–2023]

International Joint Conference on Artificial Intelligence (IJCAI)
[2020–2023]

SIAM International Conference on Data Mining (SDM)
[2012, 2014–2023]

ACM International Conference on Web Search and Data Mining (WSDM)
[2013–2014, 2020–2023]

European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD)
(research track) [2016–2019, 2021–2023]

European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD)
(applied data science track) [2015–2018, 2021–2023]

European Conference on Artificial Intelligence (ECAI)
(research track) [2023]

ACM International Conference on Information and Knowledge Management (CIKM)
(research track, long papers) [2012–2022]

AAAI Conference on Artificial Intelligence (AAAI)
[2021–2022]

International AAAI Conference on Web and Social Media (ICWSM)
[2014, 2017–2022]

Int. ACM SIGIR Conf. on Research and Development in Information Retrieval (SIGIR)
[2020–2021]

ACM International Conference on Information and Knowledge Management (CIKM)
(research track, short papers) [2019–2020]

ACM International Conference on Information and Knowledge Management (CIKM)
(industry/case studies track) [2017–2018]

PROGRAM
COMMITTEES
(OTHER
CONFERENCES
& WORK-
SHOPS)

SEBD [2022–2023]; FRCCS [2023]; DSAA – *special sessions* track [2021–2022]; DSAA – *applications* track [2019–2020]; DS [2022]; ASONAM [2015–2020]; NetSci [2020]; LOD [2017–2020]; CSoNet [2019]; SocInfo [2019]; KDIR [2016–2019]; ICoMS [2018]; ICBK [2017]; CIDM [2016]; EIDWT [2011]; Open-SOFOS Work. @ECML-PKDD [2022]; Soc2Net Work. @ASONAM [2019–2020]; BSMDMA Work. @IEEE BigData and @IJCAI [2018–2019]; MATNet Work. @WWW [2018]; SoAPS Work. @ECIR [2018]; MultiClust Work. @SDM [2012]

INVITED
TALKS

Network-based Receivable Financing
Scuola Normale Superiore
Virtual Seminar, December 2021

Dense Subgraph Discovery in Temporal Networks
Workshop on Algorithmic Aspects of Temporal Graphs IV
48th Int. Colloq. on Automata, Languages, and Programming (ICALP ‘21)
Virtual Event, July 2021

Data Science on Information-rich Graphs: New Frontiers, Problems, and Methods

University of Milan

Milan, Italy, June 2019

Mining Massive Complex Graphs: New Frontiers and Methods

ISI Foundation

Turin, Italy, September 2015

From Patterns in Data to Knowledge Discovery: what Data Mining can do

3rd International Conference Frontiers in Diagnostic Technologies (**ICFDT '13**)

Frascati, Italy, November 25-27, 2013

Projective Clustering Ensembles

Yahoo Labs

Barcelona, Spain, September 2011

Information-Theoretic Hierarchical Clustering of Uncertain Data

George Mason University

Fairfax VA, USA, April 2009

PHD THESIS	Stefano Piersanti
REVIEWING	Sapienza University – Dept. of Computer Engineering, Control and Management (DIAG) PhD Program in Engineering in Computer Science Thesis: <i>Will it fail and why? A large case study of company default prediction with highly interpretable machine learning models</i> Thesis advisor: Prof. Aris Anagnostopoulos XXXIII cycle
EXTERNAL REVIEWING	Journals: TKDE, TKDD, TPAMI, VLDBJ, MACH, DAMI, TIST, Information Systems, TWEB, TCSS, TBDATA, Pattern Recognition, Internet Mathematics, Nature Communications, AIRE, KAIS, Information Sciences, APNS, DKE, SAM, AI Communications, AI in Medicine, JOCS, Computational Intelligence, BDR, IJDSN, IJITDM, JINT, JIIS, EAAI, ADAC, Neural Networks, JDIQ, Information Fusion, IEEE Access, ISSI Conferences: SIGMOD, KDD, WWW, ICDE, ICDM, WSDM, CIKM, EDBT, SDM, ECML PKDD, PAKDD, DaWaK, CIDM, EDB, IDEAS, SEBD
CONFERENCE PARTICIPATION	ECML-PKDD '22 [55, 56], CIKM '21, ECML-PKDD '21 [26, 57, 58], ECML-PKDD '20 [59], ECML-PKDD '19 [60], BigNOMICS '19, CIKM '18 [28, 29, 30], ECML-PKDD '18 [61], ECML-PKDD '17 [10, 62], WIMS '17 [70], IEEE BigData '16 [33], ECML-PKDD '16 [64], ECML-PKDD '14 [39], KDD '14 [40], EDBT '14 [42, 43], VLDB '12 [21], SEBD '11, SIGMOD '11 [48], ICDM '10 [50, 49], ICDM '09 [51], IDEAS '09 [76], SDM '09 [52], ICDM '08 [53], SUM '08 [78], CBMS '07 [80]

TEACHING ACTIVITY

TEACHING	External Scientific Board Member
COLLABORATIONS	<i>Information and Communication Technologies</i> PhD Program
WITH	University of Calabria (Italy), Department of Computer Science, Modeling, Electronics and
UNIVERSITIES	Systems Engineering (DIMES) Cycles: XXXVIII (years '22-'25), XXXVII (years '21-'24), XXXVI (years '20-'23), XXXV (years '19-'22), XXXIV (years '18-'21), XXXIII (years '17-'20)

UniCredit Scientific co-Referent for the Industrial Liason Program (ILP)

Sapienza University, M. Sc. in Data Science

Years: 2016 – present

INDUSTRY	Machine Learning I (32 hours)
COURSES	UniCredit – Advanced Analytics Lab, <i>Data Skill Booster</i> program
	Attendees: UniCredit employees (data scientists, machine-learning engineers)
	Description: theoretical foundations and hands-on sessions on machine-learning basics
	Syllabus: <i>regression, classification, decision trees, support vector machines, ensembles, unsupervised learning</i>
	Held on Jun-Jul 2021
	Machine Learning II (32 hours)
	UniCredit – Advanced Analytics Lab, <i>Data Skill Booster</i> program
	Attendees: UniCredit employees (data scientists, machine-learning engineers)
	Description: theoretical foundations and hands-on sessions on advanced machine-learning topics
	Syllabus: <i>neural networks, convolutional neural networks, recurrent neural networks, graph neural networks, neural networks for recommender systems</i>
	Held on Oct-Nov 2021
	Neural Natural Language Processing (21 hours)
	UniCredit – Group Data & Intelligence, <i>Data Upskilling</i> program
	Attendees: UniCredit Employees (data scientists, machine-learning engineers)
	Description: theoretical foundations and hands-on sessions on the latest advances in NLP
	Syllabus: <i>word embeddings, sequence models, large language models, attention models, autoregressive models, model pretraining</i>
	To be held on May-Jul 2023
UNIVERSITY	Advanced Learning and Mining Problems in Big Graph Data (6 hours/year)
COURSES	University of Calabria (Italy)
(INSTRUCTOR)	Department of Computer Science, Modeling, Electronics and Systems Engineering (DIMES)
	PhD Program in Information and Communication Technologies
	Academic year: '17-'18
	Computer Science (55–84 hours/year)
	University of Calabria (Italy)
	Faculties of Engineering, Pharmacy, and Political Sciences, B.Sc. 1st year (remedial class project)
	Academic years: '09-'10, '08-'09
	Computer Science (16–24 hours/year)
	“Magna Græcia” University of Catanzaro, Crotone campus (Italy)
	Faculty of Medicine and Surgery, B.Sc. in Nurse Sciences (3rd year)
	Academic years: '10-'11, '09-'10, '08-'09, '07-'08
	Laboratory Activity in Computer Science (16 hours/year)
	“Magna Græcia” University of Catanzaro, Catanzaro campus (Italy)
	Faculty of Medicine and Surgery, B.Sc. in Dental Health (3rd year)
	Academic years: '09-'10
UNIVERSITY	Foundations of Computer Science (18 hours/year)
COURSES	University of Calabria (Italy)
(TEACHING	Faculty of Engineering, B.Sc. in Computer Engineering (1st year)
ASSISTANT)	Academic years: '10-'11, '09-'10, '08-'09
	Computer Science (20 hours/year)
	University of Calabria (Italy)
	Faculty of Political Sciences, M.Sc. in Political Sciences (1st year)
	Academic years: '10-'11, '08-'09, '07-'08, '06-'07

Internet Algorithms and Cryptography (13 hours/year)

University of Calabria (Italy)

Faculty of Engineering, M.Sc. in Computer Engineering (2nd year)

Academic years: '10-'11, '09-'10

Web-based Information Systems (13 hours/year)

University of Calabria (Italy)

Faculty of Engineering, M.Sc. in Computer Engineering (2nd year)

Academic years: '09-'08, '08-'07, '06-'07, '05-'06

Data and Knowledge Bases (13 hours/year)

University of Calabria (Italy)

Faculty of Engineering, M.Sc. in Management Engineering (1st year)

Academic years: '07-'08, '05-'06

Algorithms and Data Structures (13 hours/year)

University of Calabria (Italy)

Faculty of Engineering, B.Sc. in Computer Engineering (2nd year)

Academic years: '06-'07

Foundations of Computer Science I (30 hours/year)

“Magna Græcia” University of Catanzaro (Italy)

B.Sc. interuniversity course in Computer and Biomedical Engineering (1st year)

Academic years: '10-'11, '09-'10, '08-'09, '07-'08

Computer Science (8 hours/year)

“Magna Græcia” University of Catanzaro, Catanzaro campus (Italy)

Faculty of Medicine and Surgery, B.Sc. in Health Services (3rd year)

Academic years: '09-'10

TRAINING
CAMPS AND
HACKATONS Co-instructor of the “*Knowledge Graph Completion*” training camp (9 hours)
Sapienza University of Rome
M.Sc. in Data Science
Academic year: '20-'21

DOCTORAL
ADVISORSHIPS Liliana Martirano
University of Calabria
Dept. of Computer Science, Modeling, Electronics and Systems Engineering (DIMES)
PhD Program in Information and Communication Technologies
Industrial Program (“*Dottorati Innovativi con Caratterizzazione Industriale*”, PON R&I 2014-2020
Azione I.1)
Thesis: *Interpretable AI: Deep Learning for Knowledge Graphs*
XXXVI cycle (years 2020–2023)

B.Sc./M.Sc.
THESIS
ADVISORSHIPS Alessio Barboni
Sapienza University of Rome, M.Sc. in Data Science (A.Y. '22-'23)
Thesis: *Temporal Graph Representation Learning meets Credit-risk Assessment*

Giorgia Salvatori
Sapienza University of Rome, M.Sc. in Data Science (A.Y. '21-'22)
Thesis: *Graph Summarization in the Financial Domain*

Francesco Ottaviani
Sapienza University of Rome, M.Sc. in Computer Engineering (A.Y. '20-'21)
Thesis: *Characterizing Knowledge Graphs in the Embedding Space*

Dilara Isikli
Sapienza University of Rome, M.Sc. in Data Science (A.Y. '20-'21)
Thesis: *Financial Sentiment Analysis*

Marco Moauro
 Roma Tre University, M.Sc. in Computer Engineering (A.Y. '20-'21)
 Thesis: *Knowledge Graph Construction and Processing: a Case Study on the Italian Bourse*

Giacomo Lo Cascio
 Sapienza University of Rome, M.Sc. in Data Science (A.Y. '19-'20)
 Thesis: *Representation Learning on Blockchain Networks, with an Application to Cryptocurrency Price Prediction*

Alessia Galli
 Sapienza University of Rome, M.Sc. in Data Science (A.Y. '19-'20)
 Thesis: *Motif Extraction and Discord Discovery in Temporal Graphs*

Vlado Vukovic
 Sapienza University of Rome, M.Sc. in Data Science (A.Y. '18-'19)
 Thesis: *Discord Discovery in Temporal Graphs*

Giulia Di Brango
 Sapienza University of Rome, M.Sc. in Data Science (A.Y. '18-'19)
 Thesis: *Anomalous-Event Detection in Heterogeneous Graphs*

Lucia Gagliarducci
 Sapienza University of Rome, M.Sc. in Data Science (A.Y. '18-'19)
 Thesis: *Relation-Extraction for Knowledge-Graph Completion*

Giacomo Legnaro
 Sapienza University of Rome, M.Sc. in Data Science (A.Y. '17-'18)
 Thesis: *Efficient and Effective Streaming Algorithms for Network-based Invoice Factoring*

Giulia Gavazzi
 Sapienza University of Rome, M.Sc. in Data Science (A.Y. '16-'17)
 Thesis: *Mining Dense and Non-redundant Subgraphs, with an Application to Event-graph Exploration*

Fabrizio Granieri
 University of Calabria, B.Sc. in Computer Engineering (A.Y. '09-'10)
 Thesis: *Graph Partitioning for Clustering Ensembles*

Ronny Meringolo
 University of Calabria, B.Sc. in Computer Engineering (A.Y. '09-'10)
 Thesis: *Graph Partitioning for Clustering Ensembles*

Antonio Senno
 University of Calabria, M.Sc. in Computer Engineering (A.Y. '08-'09)
 Thesis: *Clustering Ensembles Methods*

Giuseppe Scrivano
 University of Calabria, B.Sc. in Computer Engineering (A.Y. '06-'07)
 Thesis: *Multidimensional Time Series: Similarity Detection and Clustering*

Emanuele Forlano
 University of Calabria, B.Sc. + M.Sc. in Computer Engineering (A.Y. '05-'06)
 Thesis: *Algorithms for Time Series Clustering*

RESEARCH	Giulia Gavazzi, Giacomo Legnaro, Hugo Maldini
INTERN	M.Sc. students at Sapienza University of Rome
SUPERVISING	Research Interns at UniCredit, Winter 2016 (Data Science Industrial Liaison Program) Project: <i>News Collection for Emerging-Event Detection</i> [70]

Alessio Areni, Cristiano Di Crescenzo, Elena Troccoli
M.Sc. students at Sapienza University of Rome
Research Interns at UniCredit, Winter 2016 (Data Science Industrial Liaison Program)
Project: *Event Detection in Temporal Graphs* [70]

Pranay Anchuri
Ph.D. student at Rensselaer Polytechnic Institute
Research Intern at Yahoo Labs Barcelona, Summer 2014
Project: *Mining Interesting Patterns from Uncertain Graphs*

Daniele Ramazzotti
Ph.D. student at University of Milano-Bicocca
Research Intern at Yahoo Labs Barcelona, Summer 2014
Project: *Social Influence Detection by Probabilistic Causation and Spatial Proximity* [29]

Edoardo Galimberti
M.Sc. student at Politecnico of Milan
Research Intern at Yahoo Labs Barcelona, Summer 2014
Project: *Efficient and Effective Community Search* [15]

Natali Ruchansky
Ph.D. student at Boston University
Research Intern at Yahoo Labs Barcelona, Summer 2014
Project: *The Minimum Wiener Connector Problem* [37]

Davide Mottin
Ph.D. student at University of Trento
Research Intern at Yahoo Labs Barcelona, Summer 2013
Project: *Query Reformulation in Graph Databases* [36]

Panos Parchas
Ph.D. student at Hong Kong University of Science and Technology
Research Intern at Yahoo Labs Barcelona, Summer 2013
Project: *Extracting Representative Instances of Uncertain Graphs* [41, 14]

Lucrezia Macchia
Ph.D. student at University of Bari
Research Intern at Yahoo Labs Barcelona, Winter 2013
Project: *Mining Summaries of Propagations* [44]

Arijit Khan
Ph.D. student at University of California at Santa Barbara
Research Intern at Yahoo Labs Barcelona, Summer 2012
Project: *Fast Reliability Search on Uncertain Graphs* [43]

Charalampos Tsourakakis
Ph.D. student at Carnegie Mellon University
Research Intern at Yahoo Labs Barcelona, Summer 2012
Project: *Extracting optimal quasi-cliques with quality guarantees* [45]

EXTERNALLY-FUNDED RESEARCH/INNOVATION COOPERATIVE PROJECTS

PARTICIPATION	The Rome Technopole Ecosystem
AS A	Funding entity: European Union - NextGenerationEU, National Recovery and Resilience Plan
RESEARCH-	(NRRP) (“Piano Nazionale di Ripresa e Resilienza” (PNRR))
STAFF	Innovation ecosystem number: ECS_00000024
MEMBER	

TYPES (*Towards transparencY and Privacy in the onlinE advertising business*)

Funding entity: EU-H2020

Project number: H2020-DS-2014-1 – Project ID 653449

SUPER (*Social sensors for secUrity Assessments and Proactive EmeRgencies management*)

Funding entity: EU-FP7

Project number: FP7-Security-2013.6.1-1 (<http://super-fp7.eu/>)

Cenit Social Media

Funding entity: Spanish Centre for the Development of Industrial Technology

CENIT program, project CEN-20101037 (<http://www.cenitsocialmedia.es/>)

GeoPKDD (*Geographic Privacy-aware Knowledge Discovery and Delivery*)

Funding entity: EU-FET-014915

Project number: IST-6FP-014915 (<http://www.geopkdd.eu>)

LogNET (*An Innovative Network to Improve Logistics in Gioia Tauro*)

Subproject LOGICA (*laboratory of LOGistics in CALabria*)

Funding entity: POR Calabria 2000-2006

EUREKA! An idea for energy

Project: *Fraud Detection via Load Profiles*

Funding entity: Enel University, area “Distribution Nets of Electricity”

PARTICIPATION
IN
PROPOSAL
DRAFTING
(PROJECTS
NOT
ACCEPTED)

PDS-OBDA: Protected Data Sharing with OBDA

Target funding programme and entity: ICT-13-2018-2019, European Commission

ALGO-AUDIT: Network for Training Algorithm Auditors for Privacy-Preserving, Fair and Transparent Data-Driven Decisions

Target funding programme and entity: H2020-MSCA-ITN-2018, European Commission

SeDaSOMA: Serendipitous, Data-as-a-Service-oriented, Open big data Management and Aalytics framework

Target funding programme and entity: H2020-ICT-16-2015, European Commission

APPOINTED
EVALUATOR
OF
PROJECT
PROPOSALS

Funding entity: **European Commission**

Funding programme: **Horizon Europe**

Proposal category: Research & Innovation Action (RIA)

Call(s): 2022

Funding entity: **European Commission**

Funding programme: **Horizon 2020 ICT**

Proposal category: Innovation Action (IA)

Call(s): 2017

Funding entity: Austrian Research Promotion Agency (**FFG**)

Funding programme: **ICT of the Future**

Proposal category: Industrial Research, Experimental Development

Call(s): 4th (2015), 5th (2016), 6th (2017)

Funding entity: Austrian Research Promotion Agency (**FFG**)

Funding programme: **Beyond Europe**

Proposal category: Industrial Research, Experimental Development

Call(s): 1st (2016), 2nd (2017)

Funding entity: Austrian Research Promotion Agency (**FFG**) & Chinese Academy of Sciences (**CAS**)

Funding programme: **ICT of the Future – Bilateral China Call**

Proposal category: Industrial Research, Experimental Development

Call(s): 1st (2017)

HONORS AND AWARDS

Italian National Scientific Habilitation (*Abilitazione Scientifica Nazionale (ASN)*)

Granted by: Italian Ministry of Education, Universities and Research (*MIUR*)

Role: Associate Professor (*II fascia*)

Sector 01/B1 - Computer science (*Informatica*), valid from Aug 7th, 2018 to Aug 7th, 2027

Sector 09/H1 - Information processing systems (*Sistemi di elaborazione delle informazioni*), valid from Jul 26th, 2018 to Jul 26th, 2027

Top-2% Most Cited Scientist across all Scientific Disciplines

Updated science-wide author databases of standardized citation indicators

Stanford University

(<https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/4>)

Year: 2022

ECML-PKDD 2021 Best Reviewer Award

Granted to selected reviewers for “*their timely and insightful reviews and for actively participating in the discussions*”

ABI IT Innovation Award 2018 (“Premio Innovazione IT – Tecnologie Disruptive”)

Granted by “Associazione Bancaria Italiana” (ABI), the trade association of Italian banks

Awarded system: UC Balance (an innovative system for network-based invoice factoring)

Personal contribution: design, theoretical characterization, and implementation of the algorithmic core behind the system

WWW 2017 Outstanding Reviewer Award

Granted to selected reviewers “*who went well beyond their call of duty, provided exceptional reviews, and contributed a lot to discussions*”

BDTA 2016 Best Paper Award

Paper “*Handling Uncertainty in Clustering Art-exhibition Visiting Styles*” [72]

“**BC**” label (“*paper where the results are backed by code*”)

from the 2015 Arizona University Repeatability in Computer Science study

(<http://reproducibility.cs.arizona.edu/v2>)

Paper “*Uncertain Centroid based Partitional Clustering of Uncertain Data*” [21]

SIGMOD 2011 Repeatability and Workability Evaluation (RWE) label

Paper “*Advancing Data Clustering via Projective Clustering Ensembles*” [48]

SDM 2009 Student Travel Award

Paper “*Diversity-based Weighting Schemes for Clustering Ensembles*” [52]

Italian Innovation Award (*Premio Nazionale per l’Innovazione*) - I edition (2009)

Fraud Detection via Load Profiles project within *EUREKA! An idea for energy* initiative

(Italian) Habilitation to practice as an Engineer

Section A, Field of Information Technology

Qualifying exam passed on October 2006 (1st 2006 session), no expiration date

Tuition fee reimbursement (based *solely* on merit)

M.Sc. in Computer Engineering

University of Calabria, 2003

INDUSTRIAL ACTIVITY

PATENTS	H. Vahabi, F. Gullo <i>Method and/or System for Recommender System</i> Patent Granted [US10796239B2, 2020-10-06]
	X. Bai, B. B. Cambazoglu, F. Gullo, A. Mantrach, F. Silvestri <i>Using Exogenous Sources for Personalization of Website Services</i> Patent Granted [US9792372B2, 2017-10-10]
	F. Bonchi, A. Gionis, F. Gullo, A. Ukkonen <i>Method and System for Computing Relationship-Constrained Shortest Paths in Large Networks</i> Defensive Publication
	F. Bonchi, A. Gionis, F. Gullo, C. Tsourakakis <i>Method and System for Extracting High-quality Subgraphs from Large Graphs</i> Defensive Publication
INDUSTRIAL PROJECTS (SELECTED)	<i>Large-Language-Model-based Search on Internal Sharepoint Content</i> Outcome: PoC Skills: large language models; semantic search; Technology: OpenAI; Azure Workbench
	<i>Graph-based Credit-risk Assessment</i> Outcome: PoC Skills: (temporal) graph representation learning; supervised learning Technology: Palantir Foundry, Python, Docker, PyTorch
	<i>Prediction of Credit Card Installments</i> Outcome: production Skills: supervised learning, sequential learning, reinforcement learning Technology: Palantir Foundry, Python, PySpark
	<i>Building and Analyzing a Knowledge Graph of HW/SW Resources</i> Outcome: PoC Skills: graph databases, (knowledge) graph analytics Technology: Neo4j, Python, Java
	<i>Building and Analyzing a Knowledge Graph of Corporates</i> Product: PoC Skills: graph databases, (knowledge) graph analytics Technology: Neo4j, Python, Java
	<i>A Complete NLP Pipeline for Processing Garnishment Documents</i> Outcome: production Skills: NLP, supervised learning, word embeddings, OCR Technology: Scala, Python, Weka, Stanford CoreNLP, SpaCy, OpenCV, Tesseract
	<i>Network-based Invoice Factoring</i> Outcome: production Skills: combinatorial optimization, graph analytics, network flow, cycle enumeration Technology: Scala
	<i>Email Classification for Talent Acquisition</i> Outcome: prototype Skills: NLP, supervised learning Technology: Java, Weka, JavaMail, EWS Java API

Identification of Crisis Events for Business Continuity

Outcome: prototype

Skills: NLP, entity recognition and disambiguation, sentiment analysis, text categorization

Technology: Scala, Spark, HBase

Entity Recognition and Disambiguation for Financial News

Outcome: PoC

Skills: NLP, entity recognition and disambiguation, MinHash, locality-sensitive hashing (LSH)

Technology: Scala, Spark, HBase

Detecting Corporate Group Structure from Unstructured Data

Outcome: production

Skills: web scraping, learning from positive and unlabeled examples, NLP, entity recognition and disambiguation, computer vision

Technology: Scala, Spark, Weka, OpenCV

Exploiting Search History of Users for News Personalization

Outcome: production

Skills: personalization of online services, query-log analysis, distributed computing

Technology: Java, Hadoop

Predicting the Next Application a User is Going to Use

Outcome: PoC

Skills: supervised learning, recommender systems, mobile data, distributed computing

Technology: Java, Hadoop, Hive

Churn Analysis on Flickr

Outcome: PoC

Skills: churn analysis, supervised learning, distributed computing

Technology: Java, Matlab, Hadoop

Optimal User Engagement through Social-Diffusion-aware Recommender Systems

Outcome: production

Skills: recommender systems, information diffusion in complex networks, distributed computing

Technology: Java, Hadoop

Ticker Similarity Search

Outcome: prototype

Skills: online similarity search, time-series analysis, locality-sensitive hashing (LSH)

Technology: Java

Identification of Historical Trends in Organic Search via Query-log Analysis

Outcome: prototype

Skills: query-log analysis, distributed computing

Technology: Java, Hadoop

OPEN SOURCE PyCCAlg – Correlation-Clustering Algorithms in Python

PROTOTYPES <https://github.com/fgullo/pyccalg>

(CO-)DEVELOPED Skills: correlation clustering, linear programming

(SELECTED) Technology: Python, SciPy, PuLP

JPCE – Java-based Projective Clustering Ensembles tool

<http://people.dimes.unical.it/andreatagarelli/software/jpce/>

<https://github.com/fgullo/jpce>

Skills: clustering ensembles, subspace clustering, projective clustering ensembles

Technology: Java

JCLUdata – a Java software for clustering uncertain data
<https://github.com/fgullo/jcludata>
 Skills: clustering, uncertain data, probability theory, information theory
 Technology: Java

Hermes – A distributed-messaging tool for NLP
<http://hermes.rnd.unicredit.it:9603>
 Skills: NLP, graph analytics
 Technology: Scala, Spark, Kafka, Redis, ElasticSearch, Hbase

MSPtool – Mass Spectra Preprocessing tool
<http://polifemo.deis.unical.it/~gtradigo/jnlp/msptool/>
 Skills: bioinformatics, mining of biological data, time-series analysis
 Technology: Java, JFreeChart, Java Web Start, J2EE

TSCtool – Time Series Clustering tool
 Skills: time-series analysis, mining of spatio/temporal data
 Technology: Java, JFreeChart

TECHNICAL SKILLS (NON-EXHAUSTIVE)

GENERAL-PURPOSE PROGRAMMING LANGUAGES: Java, Python, Scala, C/C++

DOMAIN-SPECIFIC LANGUAGES:

MATLAB (matrix programming), SQL (relational DB querying), HTML (web-page markup), XML (machine-readable doc markup), Bash (shell scripting), LaTeX (typesetting), Markdown (text formatting), Prolog, Datalog (logic programming)

VERSIONING TECHNOLOGY: Git, SVN

BUILD-AUTOMATION TECHNOLOGY: SBT, Apache Maven

DATABASES:

MySQL, PostgreSQL (RDBMSs), Neo4j (graph DBs), Redis, Couchbase Server (non-relational DBs)

VIRTUALIZATION TECHNOLOGY: Docker

CLOUD-COMPUTING SUITES: Google Cloud Platform, Microsoft Azure

MACHINE-LEARNING FRAMEWORKS: PyTorch, PyTorch Geometric

KNOWLEDGE-GRAPH-EMBEDDING FRAMEWORKS: PyKEEN, OpenKE

DISTRIBUTED-COMPUTING TECHNOLOGY: Apache Hadoop, Apache Spark, Apache HBase, Apache Hive

STREAM-PROCESSING TECHNOLOGY: Apache Kafka

DATA-MANAGEMENT PLATFORMS: Palantir Foundry

SEARCH ENGINES: Elasticsearch

INTERACTIVE-COMPUTING TECHNOLOGY: Jupyter Notebook

WEB-APPLICATION TECHNOLOGY: Java EE, Java servlet, JavaServer Pages (JSP), Jboss, Apache Tomcat

SOFTWARE LIBRARIES:

Stanford CoreNLP, Weka, JDBC, JavaMail, JFreeChart (Java); spaCy, NumPy, SciPy, pandas, NetworkX, OpenCV (Python)

OPERATING SYSTEMS: macOS, Windows, Unix/Linux

QUANTUM COMPUTING: IBM Qiskit SDK

SELECTED PUBLICATIONS

JOURNALS

- [1] F. Gullo, D. Mandaglio, A. Tagarelli. A Combinatorial Multi-Armed Bandit Approach to Correlation Clustering. *Data Mining and Knowledge Discovery (DAMI)*, 2023, TO APPEAR.
- [2] J. Layne, J. Carpenter, E. Serra, F. Gullo. Temporal SIR-GN: Efficient and Effective Structural Representation Learning for Temporal Graphs. *Proceedings of the VLDB Endowment (PVLDB)*, 2023, TO APPEAR.
- [3] E. Galimberti, M. Ciaperoni, A. Barrat, F. Bonchi, C. Cattuto, F. Gullo. Span-core Decomposition for Temporal Networks: Algorithms and Applications. *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 15(1): 2:1-2:44, 2021 (DOI: <https://dx.doi.org/10.1145/3418226>).
- [4] I. Bordino, F. Gullo, G. Legnaro. Advancing Receivable Financing via a Network-based Approach. *IEEE Transactions on Network Science and Engineering (TNSE)*, 8(2):1328-1337, 2021 (DOI: <http://dx.doi.org/10.1109/TNSE.2020.3005612>).
- [5] I. Bordino, A. Ferretti, F. Gullo, S. Pascolutti. GarNLP: A Natural Language Processing Pipeline for Garnishment Documents. *Information Systems Frontiers (ISFI)*, 23(1):101-114, 2021 (DOI: <http://dx.doi.org/10.1007/s10796-020-09997-0>).
- [6] M. Ciaperoni, E. Galimberti, F. Bonchi, C. Cattuto, F. Gullo, A. Barrat. Relevance of temporal cores for epidemic spread in temporal networks. *Scientific Reports (SciRep)*, 2020, ONLINE (DOI: <https://dx.doi.org/10.1038/s41598-020-69464-3>).
- [7] E. Galimberti, F. Bonchi, F. Gullo, T. Lanciano. Core Decomposition in Multilayer Networks: Theory, Algorithms, Applications. *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 14(1):11:1-11:40, 2020 (DOI: <http://dx.doi.org/10.1145/3369872>).
- [8] F. Bonchi, I. Bordino, F. Gullo, G. Stilo. The Importance of Unexpectedness: Discovering Buzzing Stories in Anomalous Temporal Graphs. *Web Intelligence (WI)*, 17(3):177-198, 2019 (DOI: <http://dx.doi.org/10.3233/WEB-190412>).
- [9] A. Khan, F. Bonchi, F. Gullo, A. Nufer. Conditional Reliability in Uncertain Graphs. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 30(11):2078-2092, 2018 (DOI: <http://dx.doi.org/10.1109/TKDE.2018.2816653>).
- [10] A. Tagarelli, A. Amelio, F. Gullo. Ensemble-based Community Detection in Multilayer Networks. *Data Mining and Knowledge Discovery (DAMI)*, 31(5):1506-1543, 2017 (DOI: <http://dx.doi.org/10.1007/s10618-017-0528-8>).
- [11] F. Gullo, G. Ponti, A. Tagarelli, S. Greco. An Information-Theoretic Approach to Hierarchical Clustering of Uncertain Data. *Information Sciences*, 402:199-215, 2017 (DOI: <http://dx.doi.org/10.1016/j.ins.2017.03.030>).
- [12] X. Bai, B. Barla Cambazoglu, F. Gullo, A. Mantrach, F. Silvestri. Exploiting Search History of Users for News Personalization. *Information Sciences*, 385-386:125-137, 2017 (DOI: <http://dx.doi.org/10.1016/j.ins.2016.12.038>).
- [13] I. Assent, C. Domeniconi, F. Gullo, A. Tagarelli, A. Zimek. MultiClust 2013: Multiple Clusterings, Multi-view Data, Multi-source Knowledge-driven Clustering. *SIGKDD Explorations*, 18(1):35-38, 2016 (DOI: <http://dx.doi.org/10.1145/2980765.2980769>).
- [14] P. Parchas, F. Gullo, D. Papadias, F. Bonchi. Uncertain Graph Processing through Representative Instances. *ACM Transactions on Database Systems (TODS)*, 40(3):20:1-20:39, 2015 (DOI: <http://dx.doi.org/10.1145/2818182>).
- [15] N. Barbieri, F. Bonchi, E. Galimberti, F. Gullo. Efficient and Effective Community Search.

Data Mining and Knowledge Discovery (DAMI), 29(5):1406-1433, 2015 (DOI: <http://dx.doi.org/10.1007/s10618-015-0422-1>).

- [16] F. Bonchi, A. Gionis, F. Gullo, C. Tsourakakis, A. Ukkonen. Chromatic Correlation Clustering. *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 9(4):34:1-34:24, 2015 (DOI: <http://dx.doi.org/10.1145/2728170>).
- [17] F. Gullo. From Patterns in Data to Knowledge Discovery: What Data Mining Can Do. *Physics Procedia*, 62:18-22, 2015 (DOI: <http://dx.doi.org/10.1016/j.phpro.2015.02.005>).
- [18] F. Gullo, C. Domeniconi, A. Tagarelli. Metacenter-based Projective Clustering Ensembles. *Machine Learning*, 98(1-2):181-216, 2015 (DOI: <http://dx.doi.org/10.1007/s10994-013-5395-y>).
- [19] F. Gullo, G. Ponti, A. Tagarelli. Minimizing the Variance of Cluster Mixture Models for Clustering Uncertain Objects. *Statistical Analysis and Data Mining (SAM)*, 6(2):116-135, 2013 (DOI: <http://dx.doi.org/10.1002/sam.11170>).
- [20] F. Gullo, C. Domeniconi, A. Tagarelli. Projective Clustering Ensembles. *Data Mining and Knowledge Discovery (DAMI)*, 26(3):452-511, 2013 (DOI: <http://dx.doi.org/10.1007/s10618-012-0266-x>).
- [21] F. Gullo, A. Tagarelli. Uncertain Centroid based Partitional Clustering of Uncertain Data. *Proceedings of the VLDB Endowment (PVLDB)*, 5(7):610-621, 2012.
- [22] F. Gullo, G. Ponti, A. Tagarelli, G. Tradigo, P. Veltri. A Time Series Approach for Clustering Mass Spectrometry Data. *Journal of Computational Science (JOCS)*, 3(5):344-355, 2012 (DOI: <http://dx.doi.org/10.1016/j.jocs.2011.06.008>).
- [23] S. Greco, F. Gullo, G. Ponti, A. Tagarelli. Collaborative Clustering of XML Documents. *Journal of Computer and System Sciences (JCSS)*, 77(6):988-1008, 2011 (DOI: <http://dx.doi.org/10.1016/j.jcss.2011.02.005>).
- [24] F. Gullo, G. Ponti, A. Tagarelli, S. Greco. A Time Series Representation Model for Accurate and Fast Similarity Detection. *Pattern Recognition*, 42(11):2998-3014, 2009 (DOI: <http://dx.doi.org/10.1016/j.patcog.2009.03.030>).
- [25] F. Gullo, G. Ponti, A. Tagarelli, G. Tradigo, P. Veltri. MaSDA: A System for Analyzing Mass Spectrometry Data. *Computer Methods and Programs in Biomedicine (CMPB)*, 95(2 suppl.):S12-S21, 2009 (DOI: <http://dx.doi.org/10.1016/j.cmpb.2009.02.011>).

CONFERENCES

- [26] D. Mandaglio, A. Tagarelli, F. Gullo. Correlation Clustering with Global Weight Bounds. In *Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD '21)*. pp. 499-515. Bilbao, Spain, September 13-17, 2021.
- [27] D. Mandaglio, A. Tagarelli, F. Gullo. In and Out: Optimizing Overall Interaction in Probabilistic Graphs under Clustering Constraints. In *Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD '20)*, pp. 1371-1381. San Diego, CA – USA, August 23-27, 2020.
- [28] E. Galimberti, A. Barrat, F. Bonchi, C. Cattuto, F. Gullo. Mining (maximal) Spancores from Temporal Networks. In *Proceedings of the ACM International Conference on Knowledge and Information Management (CIKM '18)*, pp. 107-116. Turin, Italy, October 22-26, 2018.
- [29] F. Bonchi, F. Gullo, B. Mishra, D. Ramazzotti. Probabilistic Causal Analysis of Social Influence. In *Proceedings of the ACM International Conference on Knowledge and Information Management (CIKM '18)*, pp. 1003-1012. Turin, Italy, October 22-26, 2018.
- [30] I. Bordino, F. Gullo. Network-based Receivable Financing. In *Proceedings of the ACM*

International Conference on Knowledge and Information Management (CIKM '18), pp. 2137-2145. Turin, Italy, October 22-26, 2018.

- [31] E. Galimberti, F. Bonchi, F. Gullo. Core Decomposition and Densest Subgraph in Multilayer Networks. In *Proceedings of the ACM International Conference on Knowledge and Information Management (CIKM '17)*, pp. 1807-1816. Singapore, November 6-10, 2017.
- [32] N. Ruchansky, F. Bonchi, D. Garcia Soriano, F. Gullo, N. Kourtellis. To Be Connected, or Not to Be Connected: That is the Minimum Inefficiency Subgraph Problem. In *Proceedings of the ACM International Conference on Knowledge and Information Management (CIKM '17)*, pp. 879-888. Singapore, November 6-10, 2017.
- [33] I. Bordino, A. Ferretti, M. Firrincieli, F. Gullo, M. Paris, S. Pascolutti, G. Sabena. Advancing NLP via a distributed-messaging approach. In *Proceedings of the 2016 IEEE International Conference on Big Data (IEEE BigData '16)*, pp. 1561-1568. Washington D.C., USA, December 5-8, 2016.
- [34] H. Vahabi, I. Koutsopoulos, F. Gullo, M. Halkidi. DifRec: a Social-Diffusion-aware Recommender System. In *Proceedings of the ACM International Conference on Knowledge and Information Management (CIKM '15)*, pp. 1481-1490. Melbourne, Australia, October 19-23, 2015.
- [35] A. Khan, F. Gullo, T. Wohler, F. Bonchi. Top-k Reliable Edge Colors in Uncertain Graphs. In *Proceedings of the ACM International Conference on Knowledge and Information Management (CIKM '15)*, pp. 1851-1854. Melbourne, Australia, October 19-23, 2015.
- [36] D. Mottin, F. Bonchi, F. Gullo. Graph Query Reformulation with Diversity. In *Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD '15)*, pp. 825-834. Sydney, Australia, August 10-13, 2015.
- [37] N. Ruchansky, F. Bonchi, D. Garcia Soriano, F. Gullo, N. Kourtellis. The Minimum Wiener Connector Problem. In *Proceedings of the ACM SIGMOD International Conference on Management of Data (SIGMOD '15)*, pp. 1587-1602. Melbourne, Victoria, Australia, May 31-June 14, 2015.
- [38] O. Balalau, F. Bonchi, T-H. Hubert Chan, F. Gullo, M. Sozio. Finding Subgraphs with Maximum Total Density and Limited Overlap. In *Proceedings of the International Conference on Web Search and Data Mining (WSDM '15)*, pp. 379-388. Shanghai, China, February 2-6, 2015.
- [39] F. Gullo, G. Ponti, A. Tagarelli. Be certain of how-to before mining uncertain data. In *Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD '14) (Nectar Track)*, pp. 489-493. Nancy, France, September 15-19, 2014.
- [40] F. Bonchi, F. Gullo, A. Kaltenbrunner, Y. Volkovich. Core Decomposition of Uncertain Graphs. In *Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD '14)*, pp. 1316-1325. New York City, New York (USA), August 24-27, 2014.
- [41] P. Parchas, F. Gullo, D. Papadias, F. Bonchi. The Pursuit of a Good Possible World: Extracting Representative Instances of Uncertain Graphs. In *Proceedings of the ACM SIGMOD International Conference on Management of Data (SIGMOD '14)*, pp. 967-978. Snowbird, Utah (USA), June 22-27, 2014.
- [42] F. Bonchi, A. Gionis, F. Gullo, A. Ukkonen. Distance oracles in edge-labeled graphs. In *Proceedings of the International Conference on Extending Database Technology (EDBT '14)*, pp. 547-558. Athens, Greece, March 24-28, 2014.
- [43] A. Khan, F. Bonchi, A. Gionis, F. Gullo. Fast Reliability Search in Uncertain Graphs. In *Proceedings of the International Conference on Extending Database Technology*

(EDBT '14), pp. 535-546. Athens, Greece, March 24-28, 2014.

- [44] L. Macchia, F. Bonchi, F. Gullo, L. Chiarandini. Mining Summaries of Propagations. In *Proceedings of the IEEE International Conference on Data Mining (ICDM '13)*, pp. 498-507. Dallas, Texas (USA), December 7-10, 2013.
- [45] C. E. Tsourakakis, F. Bonchi, A. Gionis, F. Gullo, M. A. Tsiarli. Denser than the densest subgraph: extracting optimal quasi-cliques with quality guarantees. In *Proc. of the ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (KDD '13)*, pp. 104-112. Chicago, Illinois (USA), August 11-14, 2013.
- [46] F. Bonchi, A. Gionis, F. Gullo, A. Ukkonen. Chromatic Correlation Clustering. In *Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD '12)*, pp. 1321-1329. Beijing, China, August 12-16, 2012.
- [47] F. Gullo, A. K. A. Talukder, S. Luke, C. Domeniconi, A. Tagarelli. Multiobjective Optimization of Co-Clustering Ensembles. In *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO '12)*, pp. 1495-1496. Philadelphia, PA (USA), July 7-11, 2012.
- [48] F. Gullo, C. Domeniconi, and A. Tagarelli. Advancing Data Clustering via Projective Clustering Ensembles. In *Proceedings of the 2011 ACM SIGMOD International Conference on Management of Data (SIGMOD '11)*, pp. 733-744. Athens, Greece, June 12-16, 2011.
- [49] F. Gullo, G. Ponti, A. Tagarelli. Minimizing the Variance of Cluster Mixture Models for Clustering Uncertain Objects. In *Proceedings of the 10th IEEE International Conference on Data Mining (ICDM '10)*, pp. 839-844. Sydney, Australia, December 14-17, 2010.
- [50] F. Gullo, C. Domeniconi, A. Tagarelli. Enhancing Single-Objective Projective Clustering Ensembles. In *Proceedings of the 10th IEEE International Conference on Data Mining (ICDM '10)*, pp. 833-838. Sydney, Australia, December 14-17, 2010.
- [51] F. Gullo, C. Domeniconi, A. Tagarelli. Projective Clustering Ensembles. In *Proceedings of the 9th IEEE International Conference on Data Mining (ICDM '09)*, pp. 794-799. Miami, Florida (USA), December 6-9, 2009.
- [52] F. Gullo, A. Tagarelli, S. Greco. Diversity-based Weighting Schemes for Clustering Ensembles. In *Proceedings of the 9th SIAM International Conference on Data Mining (SDM '09)*, pp. 437-448. Sparks, Nevada (USA), April 30-May 2, 2009.
- [53] F. Gullo, G. Ponti, A. Tagarelli, S. Greco. A Hierarchical Algorithm for Clustering Uncertain Data via an Information-Theoretic Approach. In *Proceedings of the 8th IEEE International Conference on Data Mining (ICDM '08)*, pp. 821-826. Pisa, Italy, December 15-19, 2008.

BOOKS

- [54] F. Bonchi, D. Garcia Soriano, F. Gullo. Correlation Clustering. Synthesis Lectures on Data Mining and Knowledge Discovery, Morgan & Claypool Publishers, 2022 (DOI: <http://dx.doi.org/10.2200/S01163ED1V01Y202201DMK019>).

OTHER PUBLICATIONS

EDITED VOLUMES

- [55] Koprinska et al. *Machine Learning and Principles and Practice of Knowledge Discovery in Databases – International Workshops of ECML PKDD 2022, Proceedings, Part I*. Communications in Computer and Information Science (CCIS) 1752, Springer, 2023, ISBN 978-3-031-23617-4.
- [56] Koprinska et al. *Machine Learning and Principles and Practice of Knowledge Discovery in Databases – International Workshops of ECML PKDD 2022, Proceedings, Part II*. Com-

- munications in Computer and Information Science (CCIS) 1753, Springer, 2023, ISBN 978-3-031-23632-7.
- [57] Kamp *et al.* *Machine Learning and Principles and Practice of Knowledge Discovery in Databases – International Workshops of ECML PKDD 2021, Proceedings, Part I.* Communications in Computer and Information Science (CCIS) 1524, Springer, 2021, ISBN 978-3-030-93735-5.
 - [58] Kamp *et al.* *Machine Learning and Principles and Practice of Knowledge Discovery in Databases – International Workshops of ECML PKDD 2021, Proceedings, Part II.* Communications in Computer and Information Science (CCIS) 1525, Springer, 2021, ISBN 978-3-030-93732-4.
 - [59] V. Bitetta, I. Bordino, A. Ferretti, F. Gullo, G. Ponti, L. Severini. *Mining Data for Financial Applications – 5th ECML PKDD Workshop, MIDAS 2020*, co-located with the 2020 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery (ECML-PKDD 2020), Ghent, Belgium, September 18, 2020. Lecture Notes in Computer Science (LNCS) 12591, Springer, 2021, ISBN 978-3-030-66980-5.
 - [60] V. Bitetta, I. Bordino, A. Ferretti, F. Gullo, S. Pascolutti, G. Ponti. *Mining Data for Financial Applications – 4th ECML PKDD Workshop, MIDAS 2019*, co-located with the 2019 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery (ECML-PKDD 2019), Würzburg, Germany, September 16, 2019. Lecture Notes in Computer Science (LNCS) 11985, Springer, 2020, ISBN 978-3-030-37719-9.
 - [61] C. Alzate, A. Monreale, L. Bioglio, V. Bitetta, I. Bordino, G. Caldarelli, A. Ferretti, R. Guidotti, F. Gullo, S. Pascolutti, R. G. Pensa, C. Robardet, T. Squartini. *ECML PKDD 2018 Workshops – MIDAS 2018 and PAP 2018, Proceedings*, co-located with the 2018 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery (ECML-PKDD 2018), Dublin, Ireland, September 10-14, 2018. Lecture Notes in Computer Science (LNCS) 11054, Springer, 2019, ISBN 978-3-030-13462-4.
 - [62] I. Bordino, G. Caldarelli, F. Fumarola, F. Gullo, T. Squartini. *Proceedings of the First Workshop on Mining Data for financial applicationS (MIDAS 2017)*, co-located with the 2017 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery (ECML-PKDD 2017), Skopje, Macedonia, September 18, 2017. CEUR Workshop Proceedings Vol-1941, CEUR-WS.org, 2017.
 - [63] C. Domeniconi, F. Gullo, F. Bonchi, J. Domingo-Ferrer, R. Baeza-Yates, Z.-H. Zhou, X. Wu. *16th IEEE International Conference on Data Mining Workshops (ICDMW 2016)*, Barcelona, Spain, December 12, 2016. IEEE Computer Society, 2016, ISBN 978-1-5090-5472-5.
 - [64] I. Bordino, G. Caldarelli, F. Fumarola, F. Gullo, T. Squartini. *Proceedings of the First Workshop on Mining Data for financial applicationS (MIDAS 2016)*, co-located with the 2016 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery (ECML-PKDD 2016), Riva del Garda, Italy, September 19, 2016. CEUR Workshop Proceedings Vol-1774, CEUR-WS.org, 2016.
 - [65] I. Assent, C. Domeniconi, F. Gullo, A. Tagarelli, A. Zimek. *MultiClust '13: Proceedings of the 4th MultiClust Workshop on Multiple Clusterings, Multi-view Data, Multi-source Knowledge-driven Clustering*, co-located with the KDD '13 conference, Chicago, Illinois (USA), August 11 - 14, 2013. ACM, 2013, ISBN 978-1-4503-2334-5.
 - [66] T. Washio, J. Luo, P. Desikan, K.-W. Hsu, J. Srivastava, E.-P. Lim, M. Teisseire, M. Roche, C. Domeniconi, F. Gullo, A. Tagarelli, H. K. Tan, W. C. Onn. *Emerging Trends in Knowledge Discovery and Data Mining - PAKDD 2012 International Workshops: DMHM, GeoDoc, 3Clust, DSDM, Kuala Lumpur, Malaysia, May 29 - June 1, 2012, Revised Selected Papers.* Lecture Notes in Computer Science 7769, Springer, 2013, ISBN 978-3-642-36777-9.

BOOK
CHAPTERS
(REFEREED)

- [67] F. Bonchi, F. Gullo, A. Kaltenbrunner. Core Decomposition of Massive, Information-Rich Graphs. In *Encyclopedia of Social Network Analysis and Mining - 2 edition*, Springer, 2018 (DOI: https://doi.org/10.1007/978-1-4939-7131-2_110176).
- [68] F. Gullo, G. Ponti, S. Greco. Organizing XML Documents on a Peer-to-Peer Network by Collaborative Clustering. In *XML Data Mining: Models, Methods, Applications*, IGI Global, 2012, pp. 449-466 (DOI: <http://dx.doi.org/10.4018/978-1-61350-356-0.ch018>).

OTHER
INTERNATIONAL
CONFERENCES

- [69] F. Gullo, L. La Cava, D. Mandaglio, A. Tagarelli. When Correlation Clustering Meets Fairness Constraints. In *Proceedings of the Int. Conf. on Discovery Science (DS '22)*. Montpellier, France, October 10-12, 2022.
- [70] C. Di Crescenzo, G. Gavazzi, G. Legnaro, E. Troccoli, I. Bordino, F. Gullo. HERMEVENT: A News Collection for Emerging-Event Detection. In *Proceedings of the Int. Conf. on Web Intelligence, Mining and Semantics (WIMS '17)*. Amantea, Italy, June 19-22, 2017.
- [71] F. Bonchi, I. Bordino, F. Gullo, G. Stilo. Identifying Buzzing Stories via Anomalous Temporal Subgraph Discovery. In *Proceedings of the IEEE/WIC/ACM International Conference on Web Intelligence (WI '16)*, pp. 161-168. Omaha, Nebraska, USA, October 13-16, 2016.
- [72] F. Gullo, G. Ponti, A. Tagarelli, S. Cuomo, P. De Michele, F. Piccialli. Handling Uncertainty in Clustering Art-exhibition Visiting Styles. In *Proceedings of the 7th EAI International Conference on Big Data Technologies and Applications (BDTA '16)*. Seoul, South Korea, November 17-18, 2016.
- [73] I. Bordino, A. Ferretti, M. Firrincieli, F. Gullo, M. Paris, G. Sabena. Hermes: A Distributed-Messaging Tool for NLP. In *Proceedings of the 2nd International Conference on Machine Learning, Optimization, Big Data (MOD '16)*, pp. 402-406. Volterra, Italy, August 26-29, 2016.
- [74] S. Romeo, A. Tagarelli, F. Gullo, S. Greco. A Tensor-based Clustering Approach for Multiple Document Classifications. In *Proceedings of the International Conference on Pattern Recognition Applications and Methods (ICPRAM '13)*, pp. 200-205. Barcelona, Spain, February 15-18, 2013.
- [75] A. Tagarelli, F. Gullo. Evaluating PageRank Methods for Structural Sense Ranking in Labeled Tree Data. In *Proceedings of the Int. Conf. on Web Intelligence, Mining and Semantics (WIMS '12)*. Craiova, Romania, June 13-15, 2012.
- [76] F. Gullo, G. Ponti, A. Tagarelli, S. Iiritano, M. Ruffolo, D. Labate. Low-voltage Electricity Customer Profiling based on Load Data Clustering. In *Proceedings of the 13th International Database Engineering & Applications Symposium (IDEAS '09)*, pp. 330-333. Cetraro, Italy, September 16-18, 2009.
- [77] F. Gullo, G. Ponti, A. Tagarelli, G. Tradigo, P. Veltri. Hierarchical Clustering of Microarray Data with Probe-level Uncertainty. In *Proceedings of the 22th IEEE International Symposium on Computer-Based Medical Systems (CBMS '09)*. Albuquerque, New Mexico (USA), August 3-4, 2009.
- [78] F. Gullo, G. Ponti, A. Tagarelli. Clustering Uncertain Data via K-medoids. In *Proceedings of the 2nd International Conference on Scalable Uncertainty Management (SUM '08)*, pp. 229-242. Napoli, Italy, October 1-3, 2008.
- [79] F. Gullo, G. Ponti, A. Tagarelli, G. Tradigo, P. Veltri. MSPtool: A Versatile Tool for Mass Spectrometry Data Preprocessing. In *Proceedings of the 21th IEEE International Symposium on Computer-Based Medical Systems (CBMS '08)*, pp. 209-214. Jyväskylä, Finland, June 17-19, 2008.
- [80] F. Gullo, G. Ponti, A. Tagarelli, G. Tradigo, P. Veltri. A Time Series Based Approach for Classifying Mass Spectrometry Data. In *Proceedings of the 20th IEEE International Sympos-*

sium on Computer-Based Medical Systems (CBMS ‘07), pp. 412-417. Maribor, Slovenia, June 20-23, 2007.

WORKSHOPS
&
NATIONAL
CONFERENCES

- [81] D. Mandaglio, A. Tagarelli, F. Gullo. Correlation Clustering: from Local to Global Constraints. In *Proceedings of the 30th Italian Symposium on Advanced Database Systems (SEBD ‘22)*. Tirrenia (Pisa), Italy, June 19-22, 2022.
- [82] X. Bai, B. B. Cambazoglu, F. Gullo, A. Mantrach, F. Silvestri. Improving News Personalization Through Search Logs. In *Proceedings of the 1st Workshop on Social Aspects in Personalization and Search (SoAPS ‘18)*, in conjunction with the *40th European Conference on Information Retrieval (ECIR ‘18)*. Grenoble, France, March 26-29, 2018.
- [83] C. Domeniconi, F. Gullo, A. Tagarelli. The Projective Clustering Ensemble Problem for Advanced Data Clustering. In *Proceedings of the 25th Italian Symposium on Advanced Database Systems (SEBD ‘17)*. Squillace Lido (Catanzaro), Italy, June 25-29, 2017.
- [84] A. Freire, M. Manca, D. Saez-Trumper, D. Laniado, I. Bordino, F. Gullo, A. Kaltenbrunner. Graph-Based Breaking News Detection on Wikipedia. In *Proceedings of the 2016 International Wiki Workshop*, in conjunction with the *10th International AAAI Conference on Web and Social Media (Wiki@ICWSM ‘16)*. Cologne, Germany, May 17, 2016.
- [85] S. Greco, F. Gullo, G. Ponti, A. Tagarelli, G. Agapito. Clustering XML Documents: a Distributed Collaborative Approach. In *Proceedings of the 18th Italian Symposium on Advanced Database Systems (SEBD ‘10)*, pp. 406-413. Rimini, Italy, June 20-23, 2010.
- [86] S. Greco, F. Gullo, G. Ponti, A. Tagarelli. Collaborative Clustering of XML Documents. In *Proceedings of the 1st International Workshop on Distributed XML Processing: Theory and Practice (DXP ‘09)*, in conjunction with the *38th International Conference on Parallel Processing (ICPP ‘09)*. Vienna, Austria, September 22-25, 2009.
- [87] F. Gullo, G. Ponti, A. Tagarelli, S. Greco. Information-Theoretic Hierarchical Clustering of Uncertain Data. In *Proc. of the 17th Italian Symposium on Advanced Database Systems (SEBD ‘09)*, pp. 273-280. Geneva, Italy, June 21-24, 2009.
- [88] F. Gullo, G. Ponti. Hierarchical Clustering of Uncertain Data. In *Doctoral Symposium in conjunction with the 14th GII Doctoral School on Advances in Databases*, Cetraro, Italy, September 19, 2009.
- [89] F. Gullo, G. Ponti, A. Tagarelli, S. Greco. Accurate and Fast Similarity Detection in Time Series. In *Proceedings of the 15th Italian Symposium on Advanced Database Systems (SEBD ‘07)*, pp. 172-183. Bari, Italy, June 17-20, 2007.