

# 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)  
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<https://www.linkedin.com/in/francesco-gullo-2717a17>  
<https://www.researchgate.net/profile/Francesco-Gullo3>  
<http://scholar.google.it/citations?user=ueZsy3wAAAAJ&hl=en>  
<https://www.scopus.com/authid/detail.uri?authorId=22034355400>  
<https://github.com/fgullo>  
<https://bit.ly/2UgZtgu>

## SHORT BIO

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Francesco Gullo is a *researcher* at *UniCredit, R&D department*. 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*, Fairfax VA, USA. Before joining UniCredit, he spent 1.5 years in the *University of Calabria*, Italy (as a *postdoc*), and 4 years in the *Yahoo Labs*, Spain (as a *postdoc* first, and as a *research scientist* then).

His research falls into the broad areas of *artificial intelligence* and *data science*, with special emphasis on *algorithmic* aspects, i.e., on formulating novel problems, theoretically characterizing them, and designing/analyzing algorithms for their solution. His recent interests include *mining and learning on graphs*, *natural language processing*, *AI in finance*, and (*social*) *Web mining*.

He has been practicing both *applied research* (with a ~10-year work experience in industrial-research environments), and *fundamental research* (with ~80 publications in premier venues such as SIGMOD, VLDB, KDD, ICDM, CIKM, EDBT, WSDM, ECML-PKDD, SDM, TODS, TKDE, TKDD, MACH, DAMI, JCSS, TNSE, PR).

He has also been active in serving the scientific community, by, e.g., being Workshop Chair of ICDM’16, organizing workshops/symposia (MIDAS workshop @ECML-PKDD[’16-’20], MultiClust symposium @SDM’14, MultiClust workshop @KDD’13, 3Clust workshop @PAKDD’12), or being part of the program committee of major AI/data-science conferences (e.g., KDD, WWW, IJCAI, CIKM, SIGIR, ICDM, WSDM, SDM, ECML-PKDD, ICWSM).

## WORK EXPERIENCE

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[Jul'15 – Present]	<b>Researcher</b> UniCredit, Rome, Italy R&D department	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"><li>• Business-driven, mid/short-term applied research</li><li>• Fundamental research/applied research with longer-term “transversal” applicability (i.e., potentially applicable in multiple contexts)</li><li>• “Quasi-production”-stage prototyping (i.e., development of SW prototypes that are mature enough to be industrialized with minimal effort)</li><li>• Supervising interns</li><li>• 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 (conferences, workshops, sessions))</li></ul>
[Sep'13 – Jun'15]	<b>Research Scientist</b> Yahoo Labs, Barcelona, Spain Web Mining group	Carrying out fundamental and applied research that can be impactful for company's business needs. Main responsibilities: <ul style="list-style-type: none"><li>• Fundamental research/applied research with longer-term “transversal” applicability (i.e., potentially applicable in multiple contexts)</li><li>• 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</li></ul>
[Sep'11 – Aug'13]	<b>Postdoctoral Researcher</b> Yahoo Labs, Barcelona, Spain Web Mining group	<ul style="list-style-type: none"><li>• Supervising interns</li><li>• Getting patents out of the conducted research</li><li>• Participation to externally-funded research/innovation cooperative projects (both in the proposal-writing phase and in carrying out the projects' research activities)</li><li>• Impact on the scientific community (papers, collaboration with universities and research institutes, PC committees and editorial boards, organization of scientific events (conferences, workshops, sessions))</li></ul>
[Jan'10 – Aug'11]	<b>Postdoctoral Researcher</b> University of Calabria, Italy Dept. of Electronics, Computer, and Systems Science (DEIS, currently DIMES)	
[Apr'09 – Sep'09]	<b>Short-term Visiting Scholar</b> George Mason University, Fairfax, US Data Mining & Machine Learning group headed by Prof. Carlotta Domeniconi	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 – Dec'09]	<b>Research &amp; Teaching Assistant</b> University of Calabria, Italy Dept. of Electronics, Computer, and Systems Science (DEIS, currently DIMES)	

## EDUCATION

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- [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

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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 Euclidean 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:

- Mining and learning on graphs [1, 6, 7, 12, 14, 24, 25, 28, 29, 32, 33, 34, 37, 38, 39, 40, 42, 43, 61]
  - graph embedding; graph neural networks; graph similarity learning; mining and learning on blockchain graphs; dense-subgraph discovery; mining/querying information-rich graphs (e.g., temporal/multi-layer/uncertain graphs); reachability/distance queries on graphs; graph pattern mining; graph clustering; querying graph databases; link prediction
- Natural Language Processing (NLP) [4, 30, 60, 63]
  - word embeddings; text summarization; document categorization; entity recognition and disambiguation; information extraction from text; knowledge-base construction
- AI in finance [3, 27]
- (Social) Web mining [2, 8, 10, 13, 26, 31, 35, 41, 43, 65, 71, 73]
  - social-network analysis; information propagation in online services; community search/detection; social-influence analysis; personalization of online services; log analysis

In the past he has also focused on topics/problems such as *mining high-dimensional and multifaceted data* (i.e., projective/subspace clustering, clustering ensembles, projective clustering ensembles) [11, 16, 18, 44, 45, 47, 48, 49, 56, 64, 72], *uncertainty in data mining & machine learning* [9, 17, 19, 36, 46, 50, 62, 68, 76, 77], *time-series data management* [22, 66, 78], *bioinformatics* [20, 23, 67, 69, 70], *XML data management* [21, 59, 74, 75].

## INDUSTRIAL ACTIVITY

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### PATENTS

X. Bai, B. B. Cambazoglu, F. Gullo, A. Mantrach, F. Silvestri  
*Using Exogenous Sources for Personalization of Website Services*  
Patent Granted [US9792372B2, 2017-10-10]

H. Vahabi, F. Gullo  
*Method and/or System for Recommender System*  
Published Patent Application [US20170061310A1, 2017-03-02]

F. Bonchi, A. Gionis, F. Gullo, A. Ukkonen  
*Method and System for Computing Relationship-Constrained Shortest Paths in Large Networks*  
Defensive Publication

F. Bonchi, A. Gionis, F. Gullo, C. Tsourakakis  
*Method and System for Extracting High-quality Subgraphs from Large Graphs*  
Defensive Publication

### INDUSTRIAL PROJECTS (SELECTED)

*A Complete NLP Pipeline for Processing Garnishment Documents*

Product: UniCredit PIG/C2E

Skills: NLP, supervised learning, word embeddings, OCR

Technology: Scala, Python, Weka, Stanford CoreNLP, SpaCy, OpenCV, Tesseract

*Network-based Invoice Factoring*

Product: UniCredit Balance

Skills: combinatorial optimization, graph analytics, network flow, cycle enumeration

Technology: Scala

*Email Classification for Talent Acquisition*

Product: UniCredit Aladin

Skills: NLP, supervised learning

Technology: Java, Weka, JavaMail, EWS Java API

*Identification of Crisis Events for Business Continuity*

Product: UniCredit Hermes Crisis

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

Technology: Scala, Spark, HBase

*Entity Recognition and Disambiguation for Financial News*

Product: UniCredit Hermes News

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

Technology: Scala, Spark, HBase

*Detecting Corporate Group Structure from Unstructured Data*

Product: UniCredit EGM (Enhanced Group Mapping)

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

Technology: Scala, Spark, Weka, OpenCV

*News Categorization for Crisis Event Detection*

Product: UniCredit Hermes Crisis

Skills: NLP, entity recognition, entity disambiguation, text mining

Technology: Scala, Spark

*Exploiting Search History of Users for News Personalization*

Product: Yahoo News

Skills: personalization of online services, query-log analysis, big data processing

Technology: Java, Hadoop

*Predicting the Next Application a User is Going to Use*

Product: Yahoo Aviate

Skills: machine-learning predictive analytics, recommender systems, mobile data management, feature engineering, big data processing

Technology: Java, Hadoop, Hive

*Churn Analysis on Flickr*

Product: Flickr

Skills: churn analysis, predictive analytics, big data processing

Technology: Java, Matlab, Hadoop

*Optimal User Engagement through Social-Diffusion-aware Recommender Systems*

Product: Tumblr

Skills: recommender systems, information diffusion in complex networks, big data processing

Technology: Java, Hadoop

*Ticker Similarity Search*

Product: Yahoo Finance

Skills: online similarity search, time series analysis, time series motif discovery, locally-sensitive hashing (LSH)

Technology: Java

*Recommendation of Items and Streams in Heterogeneous Information Networks*

Product: Flickr

Skills: recommender systems, heterogeneous information networks

Technology: Java, Hadoop

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

Product: Yahoo Sales

Skills: query-log analysis, big data processing

Technology: Java, Hadoop

OPEN SOURCE/PUBLIC  
PROTOTYPES  
(CO-)DEVELOPED  
(SELECTED)

Hermes – A distributed-messaging tool for NLP

<http://hermes.rnd.unicredit.it:9603>

Skills: NLP, graph analytics

Technology: Scala, Spark, Kafka, Redis, ElasticSearch, Hbase

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

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

ORGANIZATION	<b>Workshop co-Chair</b> <i>16th IEEE International Conference on Data Mining (ICDM ‘16)</i>
	<b>Program co-Chair</b> <i>[1st, 2nd, 3rd, 4th, 5th] Workshop on Mining Data for financial applications (MIDAS [‘16, ‘17, ‘18, ‘19, ‘20])</i> <i>In conjunction with the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery (ECML-PKDD [‘16, ‘17, ‘18, ‘19, ‘20])</i>
	<b>Industrial Session co-Chair</b> <i>[2nd, 3rd] International Conference on Machine Learning, Optimization and Big Data (MOD [‘16, ‘17])</i>
	<b>Program co-Chair</b> <i>Mini-Symposium on Multiple Clusterings, Multi-view Data, and Multi-source Knowledge-driven Clustering (MultiClust ‘14)</i> <i>In conjunction with the 2014 SIAM Int. Conf. on Data Mining (SDM ‘14)</i>
	<b>Program co-Chair</b> <i>4th MultiClust Workshop: Multiple Clusterings, Multi-view Data, and Multi-source Knowledge-driven Clustering</i> <i>In conjunction with the 19th ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (KDD ‘13)</i>
	<b>Program co-Chair</b> <i>1st International Workshop on Multi-view data, High-dimensionality, External Knowledge: Striving for a Unified Approach to Clustering (3Clust ‘12)</i> <i>In conjunction with the 16th Pacific-Asia Conf. on Knowledge Discovery and Data Mining (PAKDD ‘12)</i>
EDITORIAL BOARDS	<i>Journal Track of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD JT)</i> [2020]
SCIENTIFIC COMMITTEES	“Data Science for Economics and Finance: Methodologies and Applications” book Editors: S. Consoli, D. Reforgiato Recupero, M. Salsana. Publisher: Springer Nature. [2020]
PROGRAM COMMITTEES	<i>International World Wide Web Conference (WWW)</i> [2014, 2016–2021]  <i>International Joint Conference on Artificial Intelligence (IJCAI)</i> [2020–2021]  <i>SIAM International Conference on Data Mining (SDM)</i> [2012, 2014–2021]  <i>ACM International Conference on Web Search and Data Mining (WSDM)</i> [2013–2014, 2020–2021]  <i>ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (KDD)</i> [2014–2020]  <i>IEEE International Conference on Data Mining (ICDM)</i> [2014–2016, 2018–2020]

*ACM International Conference on Information and Knowledge Management* (**CIKM**)  
(Research Track, long papers)  
[2012–2020]

*ACM International Conference on Information and Knowledge Management* (**CIKM**)  
(Research Track, short papers)  
[2019–2020]

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

*International AAAI Conference on Web and Social Media* (**ICWSM**)  
[2014, 2017–2020]

*IEEE/ACM Int. Conf. on Advances in Social Networks Analysis and Mining* (**ASONAM**)  
[2015–2020]

*IEEE International Conference on Data Science and Advanced Analytics* (**DSAA**)  
(Application Track) [2019–2020]

*International Conference on Network Science* (**NetSci**)  
[2020]

*International Conference on machine Learning, Optimization and big Data* (**LOD**)  
[2017–2020]

*International Workshop on Modeling and mining Social-Media-driven Complex Networks*  
(**Soc2Net**), in conjunction with the *IEEE/ACM International Conference on Advances*  
*in Social Networks Analysis and Mining* (**ASONAM**)  
[2019–2020]

*European Conference on Machine Learning and Principles and Practice of Knowledge*  
*Discovery in Databases* (**ECML PKDD**) (Research Track)  
[2016–2019]

*International Conference on Computational Data and Social Networks* (**CSoNet**)  
[2019]

*International Conference on Social Informatics* (**SocInfo**)  
[2019]

*International Conference on Knowledge Discovery and Information Retrieval* (**KDIR**)  
[2016–2019]

*International Workshop on Big Social Media Data Management and Analysis*  
(**BSMDMA**), in conjunction with the *International IEEE Conference on Big Data*  
(**IEEE BigData**) and *International Joint Conference on Artificial Intelligence* (**IJCAI**)  
[2018–2019]

*ACM International Conference on Information and Knowledge Management* (**CIKM**)  
(Industry/Case Studies Track)  
[2017–2018]

*European Conference on Machine Learning and Principles and Practice of Knowledge*  
*Discovery in Databases* (**ECML PKDD**) (Applied Data Science Track)  
[2015–2018]

*International Conference on Mathematics and Statistics* (**ICoMS**)  
[2018]

*International Workshop on Mining Attributed Networks* (**MATNet**), in conjunction with  
the *International World Wide Web Conference* (**WWW**)  
[2018]

*Workshop on Social Aspects in Personalization and Search (SoAPS)*, in conjunction with the *European Conference on Information Retrieval (ECIR)*  
[2018]

*IEEE International Conference on Big Knowledge (ICBK)*  
[2017]

*IEEE Symposium on Computational Intelligence and Data Mining (CIDM)*  
[2016]

*3rd MultiClust Workshop: Discovering, Summarizing and Using Multiple Clusterings*, in conjunction with the *SIAM International Conf. on Data Mining (SDM '12)*

*Int. Conf. on Emerging Intelligent Data and Web Technologies (EIDWT '11)*

#### INVITED TALKS

*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

#### EXTERNAL REFEREEING

**Journals:** TKDE, TKDD, TPAMI, VLDBJ, MACH, DAMI, TIST, Information Systems, TWEB, TCSS, TBDATA, Pattern Recognition, Internet Mathematics, Nature Communications, 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

**Conferences:** SIGMOD, KDD, WWW, ICDE, ICDM, WSDM, CIKM, EDBT, SDM, ECML PKDD, PAKDD, DaWaK, CIDM, EDB, IDEAS, SEBD

#### CONFERENCE PARTICIPATION

ECML-PKDD '19 [51], BigNOMICS '19, CIKM '18 [25, 26, 27], ECML-PKDD '18 [52], ECML-PKDD '17 [8, 53], WIMS '17 [60], IEEE BigData '16 [30], ECML-PKDD '16 [55], ECML-PKDD '14 [36], KDD '14 [37], EDBT '14 [39, 40], VLDB '12 [19], SEBD '11, SIGMOD '11 [45], ICDM '10 [47, 46], ICDM '09 [48], IDEAS '09 [66], SDM '09 [49], ICDM '08 [50], SUM '08 [68], CBMS '07 [70]

## EXTERNALLY-FUNDED RESEARCH/INNOVATION COOPERATIVE PROJECTS

#### PARTICIPATION AS A RESEARCH-STAFF 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”

EVALUATOR OF  
PROJECT PROPOSALS

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)

## TEACHING ACTIVITY

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BOARDS

**External Scientific Board Member**

*Information and Communication Technologies* PhD Program

University of Calabria (Italy), Department of Computer Science, Modeling, Electronics and Systems Engineering (DIMES)

Academic years: '19-'20 (XXXV cycle), '18-'19 (XXXIV cycle), '17-'18 (XXXIII cycle)

COURSES TAUGHT  
AS AN INSTRUCTOR

***Advanced Learning and Mining Problems in Big Graph Data*** (6 hours/year)

University of Calabria (Italy)

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, Crotona 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

COURSES TAUGHT  
 AS A TEACHING  
 ASSISTANT

**Foundations of Computer Science** (18 hours/year)  
 University of Calabria (Italy)  
 Faculty of Engineering, B.Sc. in Computer Engineering (1st year)  
 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

THESIS  
 (CO-)ADVISING

Giacomo Lo Cascio  
 Sapienza University of Rome, M.Sc. in Data Science (A.Y. '19-'20)  
 Thesis: *Representation Learning in Blockchain Graphs*

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 INTERN  
 (CO-)SUPERVISING

Giulia Gavazzi, Giacomo Legnaro, Hugo Maldini  
 M.Sc. students at Sapienza University of Rome  
 Research Interns at UniCredit, Winter 2016 (Data Science Industrial Liaison Program)  
 Project: *News Collection for Emerging-Event Detection* [60]

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* [60]

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* [26]

Edoardo Galimberti  
 M.Sc. student at Politecnico of Milan  
 Research Intern at Yahoo Labs Barcelona, Summer 2014  
 Project: *Efficient and Effective Community Search* [13]

Natali Ruchansky  
 Ph.D. student at Boston University  
 Research Intern at Yahoo Labs Barcelona, Summer 2014  
 Project: *The Minimum Wiener Connector Problem* [34]

Davide Mottin  
 Ph.D. student at University of Trento  
 Research Intern at Yahoo Labs Barcelona, Summer 2013  
 Project: *Query Reformulation in Graph Databases* [33]

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* [38, 12]

Lucrezia Macchia  
 Ph.D. student at University of Bari  
 Research Intern at Yahoo Labs Barcelona, Winter 2013  
 Project: *Mining Summaries of Propagations* [41]

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* [40]

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* [42]

## HONORS AND AWARDS

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### **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 7<sup>th</sup>, 2018 to Aug 7<sup>th</sup>, 2027

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

### **ABI IT Innovation Award** (“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 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*” [62]

“**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*” [19]

### **SIGMOD 2011 Repeatability and Workability Evaluation (RWE) label**

Paper “*Advancing Data Clustering via Projective Clustering Ensembles*” [45]

### **SDM 2009 Student Travel Award**

Paper “*Diversity-based Weighting Schemes for Clustering Ensembles*” [49]

**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

## TECHNICAL SKILLS (NON-EXHAUSTIVE)

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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

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

STREAM-PROCESSING TECHNOLOGY: Apache Kafka

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, pandas, NetworkX, OpenCV (Python)

OPERATING SYSTEMS: macOS, Windows, Unix/Linux

## JOURNALS

- [1] 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)*, 2020, TO APPEAR.
- [2] 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>).
- [3] I. Bordino, F. Gullo, G. Legnaro. Advancing Receivable Financing via a Network-based Approach. *IEEE Transactions on Network Science and Engineering (TNSE)*, 2020, ONLINE (DOI: <http://dx.doi.org/10.1109/TNSE.2020.3005612>).
- [4] I. Bordino, A. Ferretti, F. Gullo, S. Pascolutti. GarNLP: A Natural Language Processing Pipeline for Garnishment Documents. *Information Systems Frontiers (ISFI)*, 2020, ONLINE (DOI: <http://dx.doi.org/10.1007/s10796-020-09997-0>).
- [5] 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>).
- [6] 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>).
- [7] 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>).
- [8] 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>).
- [9] 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>).
- [10] 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>).
- [11] 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>).
- [12] 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>).
- [13] 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>).
- [14] 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>).

- [15] 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>).
- [16] F. Gullo, C. Domeniconi, A. Tagarelli. Metacluster-based Projective Clustering Ensembles. *Machine Learning*, 98(1-2):181-216, 2015 (DOI: <http://dx.doi.org/10.1007/s10994-013-5395-y>).
- [17] 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>).
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- [25] E. Galimberti, A. Barrat, F. Bonchi, C. Cattuto, F. Gullo. Mining (maximal) Span-cores 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.
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- [28] 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.

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- [35] 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.
- [36] 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.
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- [42] 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.
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- [45] 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.
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## OTHER PUBLICATIONS

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### EDITED VOLUMES

- [51] 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.
- [52] 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.

- [53] 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.
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- [55] 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.
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BOOK CHAPTERS  
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- [58] 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](https://doi.org/10.1007/978-1-4939-7131-2_110176)).
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CONFERENCES

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