PERSONAL INFORMATION

Michelangelo Ceci

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Sex male | *Date of birth* 13/11/1976 | *Nationality* Italian

Enterprise	University	EPR
☐ Management Level	☒ Full professor	☐ Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
☐ Mid-Management Level	☐ Associate Professor	☐ Level III Researcher and Technologist
☐ Employee / worker level	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

(2022 -)
Full Professor (INF/01)
University of Bari Aldo Moro

(2019 -)
Senior Research Fellow
Jozef Stefan Institute, Ljubljana, Slovenia

(2015 - 2022)
Associate Professor (ING-ING/05)
University of Bari Aldo Moro

(2005 - 2015)
Researcher (INF/01)
University of Bari Aldo Moro

EDUCATION AND TRAINING

(2001 - 2005)
(1995 - 2001)

Ph.D. in Computer Science
Laurea degree in Computer Science (5 years), 110/110L

PERSONAL SKILLS

Mother tongue(s)

Italian

Other language(s)

English - C1

PROJECTS
(last five years)
Scientific leader for the University of Bari

- FP7 MAESTRA (FET OPEN) Learning from Massive, Incompletely annotated, and Structured Data. Grant No: 612944. ROLES HELD: Scientific leader for the University of Bari, co-author of the project proposal, WP leader (WP3 - Methods for analysis of network data), member of the Executive Board.
- H2020 IMPETUS - Intelligent Management of Processes, Ethics and Technology for Urban Safety ", Grant Agreement n. 883286. ROLES HELD: Scientific leader for the University of Bari, co-author of the project proposal, WP leader (WP4 - Data Analytics, Visualization and Access Control), member of the Executive Board.
- H2020 CounteR - "Privacy-First Situational Awareness Platform for Violent Terrorism and Crime Prediction, Counter Radicalization and Citizen Protection", Grant Agreement n. 101021607. ROLES HELD: Scientific leader for the University of Bari, co-author of the project proposal, WP leader (WP3 - Data Acquisition & Management), member of the Executive Board.
- COST Action CA18131 ML4Microbiome - Statistical and machine learning techniques in human microbiome studies. ROLES HELD: Scientific head of unit, WG leader (WG 3 - Optimization and standardization) - mandate expired on July 2021, member of the Management Committee.
- PON ComESto - "Community Energy Storage: Aggregate Management of Energy Storage Systems in Power Cloud", Grant No. ARS01_01259. ROLES HELD: Scientific leader for the DHITECH consortium and for the University of Bari, co-author of the project proposal).
- PON MAD - The Additive Metamorphosis of Design. Grant No. ARS01_00717. ROLES HELD: Scientific director for the University of Bari, co-author of the project proposal.

Other roles	• PONREC Vi-POC (STARTUP) Virtual power operation center (duration 24 months). ROLES HELD: Scientific head of the unit, WP Leader, co-author of the project proposal.

Michelangelo Ceci is (was) **technical leader** for the University of Bari (UNIBA) in the following research projects:

- PON TALISMAN - Tecnologie di Assistenza personALizzata per il Miglioramento della quAlità della vitA. Grant No. ARS01_01116. ROLE: technical leader for the University of Bari.
- PON VINCENTE: un ambiente virtuale di "collective intelligence" abilitante lo sviluppo di ecosistemi per l'imprenditorialità tecnologica sostenibile. Grant No. PON02_00563_3470993. ROLE: technical leader for the University of Bari.

Michelangelo Ceci participated in the following research projects (non-exhaustive list):

- TrustwOrthy model-awaRE Analytics Data platfORm (TOREADOR), Horizon 2020 (ICT - Big data)
- FP7-325122 EAGLE: Europeana network of Ancient Greek and Latin Epigraphy

COMMUNITY SERVICE (last 5y)

General Chair

Michelangelo Ceci was general chair of ECML PKDD 2017, European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases

PC chair

Michelangelo Ceci was/is Program Co-Chair of

- Discovery Science 2016 and 2018,
- ECML PKDD 2017, European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases
- ISMIS 2018, International Symposium on Methodologies for Intelligent Systems
- IRCDL 2019, Italian Research Conference on Digital Libraries
- ISMIS 2022, International Symposium on Methodologies for Intelligent Systems

Workshops co-chair

ECML PKDD workshop on New Frontiers in Mining Complex Patterns (from 2013 to 2020)

TPC member (most relevant)

- International Joint Conference on Artificial Intelligence (IJCAI) 2013, 2015, 2017, 2018, 2019
- AAAI Conference on Artificial Intelligence 2018, 2020, 2021, 2022 (senior PC member)
- IEEE International Conference on Data mining (ICDM) 2008, 2011, 2014, 2015, 2016, 2017,
- 2018, 2019 , 2020, 2021;
- European Conference on Machine Learning and Principles and Practice of Knowledge
- Discovery in Databases (ECMLPKDD) 2011, 2012, 2013, 2014, 2015 (area chair), 2016,
- 2017 (PC chair), 2018, 2019 (area chair), 2020 (area chair), 2021 (area chair);
- ACM SIGIR conference on research and development in Information Retrieval 2020, 2021
- SIAM International Conference on Data Mining (SIAM SDM) 2012, 2020, 2021, 2022;
- Discovery Science 2014, 2015, 2016 (pc chair), 2017, 2018, 2019 (volume editor), 2020,
- 2021
- European Conference on Information Retrieval ECIR 2020
- Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD) 2009;
- International Symposium on Methodologies for Intelligent Systems (ISMIS) 2008, 2009,
- 2010, 2011, 2012, 2014, 2015, 2017, 2018 (pc chair), 2020, 2021;

Regular reviewer (most relevant)

- Data Mining and Knowledge Discovery ISSN: 1384-5810
- Machine Learning ISSN: 0885-6125
- IEEE Transactions on Industrial Informatics ISSN: 1551-3203
- ACM Transactions on Intelligent Systems and Technology (TIST) ISSN: 2157-6904
- ACM Transactions on Information Systems (TOIS) ISSN:1046-8188.
- Computing (Springer) ISSN: 0010-485X
- IEEE Transactions on Knowledge and Data Engineering (TKDE) ISSN: 1041-4347
- ACM Transactions on Knowledge Discovery from Data (ACM TKDD) ISSN: 1556-4681
- Information Sciences (INS) ISSN: 0020-0255
- Artificial intelligence in medicine ISSN:0933-3657

EDITORIAL ACTIVITY

Associate Editor & Editorial Board Member	• Machine Learning. ISSN: 0885-6125 (print) ISSN: 1573-0565 (electronic) Springer. Impact factor: 2.809 - Associate Editor
	• Data Mining and Knowledge Discovery. ISSN: 1384-5810 (print) ISSN: 1573-756X Springer. Impact factor: 2.879 - Associate Editor
Editorial Board Member	• International Journal of Distributed Sensor Networks. ISSN: 1550-1329 (Print) ISSN: 1550-1477 (online). Sage publishing. Impact factor:1.614
	• Journal of Intelligent Information Systems. ISSN: 0925-9902 (print) ISSN: 1573-7675 Springer.Impact factor: 1.589

CONTRIBUTION TO EARLY CAREERS OF RESEARCHERS/STUDENTS

PHD SUPERVISION	Michelangelo Ceci coordinates the research activity of a group of researchers on Data Science topics, exploiting the methodological basis of Machine Learning and Data Mining. Michelangelo Ceci is/was the supervisor of the research activities of the following **Ph.D. students**: Antonio Pellicani, Massimiliano Altieri, Stefano Polimena, Annunziata D'Aversa, Graziella De Martino, Emanuele Pio Barracchia, Paolo Mignone, Angelo Impedovo, Michele Spagnoletta, Roberto Corizzo, Francesco Serafino, Pasqua Fabiana Lanotte, Gianvito Pio, Lucrezia Macchia, Maria Teresa D'aprile.
Visiting Researchers	He was responsible for the research activities of the following **visiting researchers**: Dragi Kocev, Aleksandra Raskovska, Jurica Levatic.
Research fellow scholarships	He was responsible for the research activities of 8 **research fellow scholarships** (assegnisti di ricerca) and 10 research contracts funded on research projects for which he is the scientific leader.

TEACHING

Ph.D program	Abstract Data and Algorithms (Abstract Data-2 credits) – cycles XXV, XXVI e XXVII
	Business Intelligence (4 credits) – cycles XXVII e XXVIII
	Big Data for Business Intelligence (6 credits) – cycles XXIX e XXX
	Big Data Analytics (3 credits) – cycles XXXIV, XXXVI
Master program	Databases II (12 credits), SSD INF/01, a.y. 10/11, 11/12, 12/13, 13/14, 14/15, 15/16
	Knowledge bases and Data Mining (6 credits), SSD ING-INF/05, a.a. 08/09, 09/10
	Data Mining (6 credits), SSD ING-INF/05, a.a. 16/17, 17/18
	Database Systems (9 cfu credits SSD ING-INF/05, a.a. 17/18, 18/19, 19/20, 20/21, 21/22
	Big Data Analytics (6 cfu credits SSD ING-INF/05, a.a. 18/19, 19/20, 20/21, 21/22
Bechelor	Advanced databases (9 credits), INF/01, a.a. 07/08, 09/10
	Advanced programming methods (9 credits), INF/01, a.a. 05/06, 06/07, 07/08, 08/09
	Database Design (9 credits), INF/01, a.a. 20/21, 21/22
	Databases (12 credits), INF/01, a.a. 08/09, 09/10, 14/15

INSTITUTIONAL RESPONSIBILITIES

2013-2015	Member of the Board (Giunta) of the Department of Computer Science - Università degli Studi di Bari A. Moro
2019-2021	Member of the Board (Giunta) of the Department of Computer Science - Università degli Studi di Bari A. Moro
2009-present	Board of the Doctorate Program on Informatics (and Mathematics since 2010), University of Bari, Italy
Other	He is a member of the professor commission of the Ph.D. School in Computer Science (and Mathematics), Università degli Studi di Bari since 2009, and has been a member of the external commission for the final evaluation of the Ph.D. Students in Computer Science at KU Leuven (BE), Jozef Stefan Institute (SI), Università di Bologna, Università di Torino, Università della Calabria.

INVITED TALKS

"Learning from Labeled and Unlabelled Data: When the Smoothness Assumption Holds". 12 Febbraio 2011, Jozef Stefan Institute, Dept. of Knowledge Technologies (Ljubljana, Slovenia) http://videolectures.net/solomon/

"Analysis of Gene-MicroRNA Maps for Regulatory Networks Discovery". 20 Aprile 2012. Bad Neuenahr, Germania in occasione dell'evento Spring Workshop on Mining and Learning (SML 2012) https://dtai.cs.kuleuven.be/sml/

"Mining Ranking Models from (Dynamic) Network Data". 15 Luglio 2015. Stream on Preference Learning @ EURO 2015.

Michelangelo Ceci has been invited Tutorialist at SEBD 2016 (Sistemi Evoluti per le Basi di Dati) tenutosi a Ugento (LE). Title: Big Data Analytics

"Advanced topics in predicting structured outputs". Summer school on "Data Sciences for Big Data @ ECML PKDD 2015" Porto

"Mining network data" . Summer school on "MINING BIG AND COMPLEX DATA" Ohrid, North Macedonia 04/09/2021

Michelangelo Ceci has been Tutorialist, together with Prof. Joao Gama at ACM SAC 2016 (SIGAPP Symposium On Applied Computing), Pisa (Italy) Title: "Mining (Streams of) Networked Data".

"Multi-type Clustering and Classification in Heterogeneous Networks". 9/03/2018. Titisee, Switzerland, Spring Workshop on Mining and Learning (SML 2018)

"Learning from network data: does the smoothness assumption matter?": seminar for Ph.D. students in Computer Science of KU Leuven. 30/09/2019.

ADDITIONAL INFORMATION

Research topics

His main research is in Knowledge Discovery from Databases primarily in the development of Machine Learning and Data Mining algorithms for predictive tasks (classification and regression). In particular, he studies algorithms for the induction of statistical classifiers, tree-structured models from structured data. Theoretical foundations of his research are in statistics and in logic. Adopted technologies include Database technologies (Database languages, indexing) and multimedia technologies (images and text indexing, spatial data). Research applications include bioinformatics, sensor network analysis, document analysis and understanding, map interpretation, web-documents classification.

Periods abroad

During the period November 2003 – March 2004 he collaborated as research student with the Machine Learning Research Group headed by prof. Peter Flach of the Department of Computer Science, University of Bristol (U.K.). In the period January 2011- March 2011, he collaborated as an invited researcher with the Group leaded by Prof. Saso Dzeroski of the Jozef Stefan Institute (Slovenia).

PUBLICATIONS

Publications best and most relevant in the last 10 years

- Hess S., Pio G., Hochstenbach M., Ceci M. (2021). BROCCOLI: overlapping and outlier-robust biclustering through proximal stochastic gradient descent. DATA MINING AND KNOWLEDGE DISCOVERY, ISSN: 1384-5810, doi: 10.1007/s10618-021-00787-z
- Pio, Gianvito, Mignone, Paolo, Magazzù, Giuseppe, Zampieri, Guido, Ceci, Michelangelo, Angione, Claudio (2021). Integrating genome-scale metabolic modelling and transfer learning for human gene regulatory network reconstruction. BIOINFORMATICS, ISSN: 1367-4803, doi: 10.1093/bioinformatics/btab647
- Graziella De Martino, Gianvito Pio, Michelangelo Ceci (2021). PRILJ: an efficient two-step method based on embedding and clustering for the identification of regularities in legal case judgments. ARTIFICIAL INTELLIGENCE AND LAW, ISSN: 0924-8463, doi: 10.1007/s10506-021-09297-1
- Ceci M., Lanotte P. F. (2020). Closed sequential pattern mining for sitemap generation. WORLD WIDE WEB, ISSN: 1386-145X, doi: 10.1007/s11280-020-00839-2
- Impedovo A., Loglisci C., Ceci M., Malerba D. (2020). Condensed representations of changes in dynamic graphs through emerging subgraph mining. ENGINEERING APPLICATIONS OF ARTIFICIAL INTELLIGENCE, vol. 94, ISSN: 0952-1976, doi: 10.1016/j.engappai.2020.103830
- Kocev D., Ceci M., Stepisnik T. (2020). Ensembles of extremely randomized predictive clustering trees for predicting structured outputs. MACHINE LEARNING, vol. 109, p. 2213-2241, ISSN: 0885-6125, doi: 10.1007/s10994-020-05894-4
- Mignone, Paolo, Pio, Gianvito, D'Elia, Domenica, Ceci, Michelangelo (2020). Exploiting Transfer Learning for the Reconstruction of the Human Gene Regulatory Network. BIOINFORMATICS, vol. 36, p. 1553-1561, ISSN: 1367-4803, doi: 10.1093/bioinformatics/btz781
- Gianvito Pio, Michelangelo Ceci, Francesca Prisciandaro, Donato Malerba (2020). Exploiting causality in gene network reconstruction based on graph embedding. MACHINE LEARNING, vol. 109, p. 1231-1279, ISSN: 0885-6125, doi: 10.1007/s10994-019-05861-8
- Corizzo R., Ceci M., Fanaee-T H., Gama J. (2020). Multi-aspect renewable energy forecasting. INFORMATION SCIENCES, vol. 546, p. 701-722, ISSN: 0020-0255, doi: 10.1016/j.ins.2020.08.003
- Barracchia E. P., Pio G., D'Elia D., Ceci M. (2020). Prediction of new associations between

ncRNAs and diseases exploiting multi-Type hierarchical clustering. BMC BIOINFORMATICS, vol. 21, ISSN: 1471-2105, doi: 10.1186/s12859-020-3392-2

- Corizzo R., Ceci M., Zdravevski E., Japkowicz N. (2020). Scalable auto-encoders for gravitational waves detection from time series data. EXPERT SYSTEMS WITH APPLICATIONS, vol. 151, ISSN: 0957-4174, doi: 10.1016/j.eswa.2020.113378
- Levatic J., Ceci M., Stepisnik T., Dzeroski S., Kocev D. (2020). Semi-supervised regression trees with application to QSAR modelling. EXPERT SYSTEMS WITH APPLICATIONS, vol. 158, ISSN: 0957-4174, doi: 10.1016/j.eswa.2020.113569
- Impedovo A., Loglisci C., Ceci M., Malerba D. (2020). jKarma: A highly-modular framework for pattern-based change detection on evolving data. KNOWLEDGE-BASED SYSTEMS, vol. 192, ISSN: 0950-7051, doi: 10.1016/j.knosys.2019.105303
- Corizzo R., Ceci M., Japkowicz N. (2019). Anomaly Detection and Repair for Accurate Predictions in Geo-distributed Big Data. BIG DATA RESEARCH, vol. 16, p. 18-35, ISSN: 2214-5796, doi: 10.1016/j.bdr.2019.04.001
- Corizzo R., Pio G., Ceci M., Malerba D. (2019). DENCAST: distributed density-based clustering for multi-target regression. JOURNAL OF BIG DATA, vol. 6, ISSN: 2196-1115, doi: 10.1186/s40537-019-0207-2
- Malondkar A., Corizzo R., Kiringa I., Ceci M., Japkowicz N. (2019). Spark-GHSOM: Growing Hierarchical Self-Organizing Map for large scale mixed attribute datasets. INFORMATION SCIENCES, vol. 496, p. 572-591, ISSN: 0020-0255, doi: 10.1016/j.ins.2018.12.007
- Ceci M., Corizzo R., Malerba D., Rashkovska A. (2019). Spatial autocorrelation and entropy for renewable energy forecasting. DATA MINING AND KNOWLEDGE DISCOVERY, vol. 33, p. 698-729, ISSN: 1384-5810, doi: 10.1007/s10618-018-0605-7
- Serafino, Francesco, Pio, Gianvito, Ceci, Michelangelo (2018). Ensemble Learning for Multi-Type Classification in Heterogeneous Networks. IEEE TRANSACTIONS ON KNOWLEDGE AND DATA ENGINEERING, vol. 30, p. 2326-2339, ISSN: 1041-4347, doi: 10.1109/TKDE.2018.2822307
- Loglisci, Corrado, Ceci, Michelangelo, Impedovo, Angelo, Malerba, Donato (2018). Mining microscopic and macroscopic changes in network data streams. KNOWLEDGE-BASED SYSTEMS, vol. 161, p. 294-312, ISSN: 0950-7051, doi: 10.1016/j.knosys.2018.07.011
- Pio, Gianvito, Serafino, Francesco, Malerba, Donato, Ceci, Michelangelo (2018). Multi-type clustering and classification from heterogeneous networks. INFORMATION SCIENCES, vol. 425, p. 107-126, ISSN: 0020-0255, doi: 10.1016/j.ins.2017.10.021
- Jurica Levatić, Dragi Kocev, Michelangelo Ceci, Sašo Džeroski (2018). Semi-supervised trees for multi-target regression. INFORMATION SCIENCES, vol. 450, p. 109-127, ISSN: 0020-0255, doi: 10.1016/j.ins.2018.03.033
- Ceci, Michelangelo, Corizzo, Roberto, Fumarola, Fabio, Malerba, Donato, Rashkovska, Aleksandra (2017). Predictive modeling of PV energy production: How to set up the learning task for a better prediction?. IEEE TRANSACTIONS ON INDUSTRIAL INFORMATICS, vol. 13, p. 956-966, ISSN: 1551-3203, doi: 10.1109/TII.2016.2604758
- Levatić, Jurica, Ceci, Michelangelo, Kocev, Dragi, džeroski, sašo (2017). Self-training for multi-target regression with tree ensembles. KNOWLEDGE-BASED SYSTEMS, vol. 123, p. 41-60, ISSN: 0950-7051, doi: 10.1016/j.knosys.2017.02.014
- Fumarola, Fabio, Lanotte, Pasqua Fabiana, Ceci, Michelangelo, Malerba, Donato (2016). CloFAST: closed sequential pattern mining using sparse and vertical id-lists. KNOWLEDGE AND INFORMATION SYSTEMS, vol. 48, p. 429-463, ISSN: 0219-1377, doi: 10.1007/s10115-015-0884-x
- Pio, Gianvito, Ceci, Michelangelo, Malerba, donato, d'elia, domenica (2015). ComiRNet: A web-based system for the analysis of miRNA-gene regulatory networks. BMC BIOINFORMATICS, vol. 16, ISSN: 1471-2105, doi: 10.1186/1471-2105-16-S9-S7
- Loglisci, Corrado, Ceci, Michelangelo, Malerba, donato (2015). Relational mining for discovering changes in evolving networks. NEUROCOMPUTING, vol. 150, p. 265-288, ISSN: 0925-2312, doi: 10.1016/j.neucom.2014.08.079
- Stojanova D, Ceci, Michelangelo, Appice, Annalisa, Džeroski S. (2012). Network regression with predictive clustering trees. DATA MINING AND KNOWLEDGE DISCOVERY, vol. 25, p. 378-413, ISSN: 1384-5810, doi: 10.1007/s10618-012-0278-6

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV

Bari, 20/04/2022   Prof. Michelangelo Ceci