

# Andrea Campagner

## CURRICULUM VITAE

### PERSONAL INFORMATION

SURNAME	CAMPAGNER
NAME	ANDREA
BIRTH DATE	13/02/1993
SCHOLAR PROFILE	<a href="https://scholar.google.it/citations?user=HWVs0akAAAAJ">HTTPS://SCHOLAR.GOOGLE.IT/CITATIONS?USER=HWVs0akAAAAJ</a>

### Work Experience

#### Tenure-Track Assistant Professor (RTT)

University of Milano-Bicocca (Milano, Italia), Department of Computer Science, Systems and Communication

01/11/2025 - current

I am a Tenure Track Assistant Professor (RTT) in the Department of Computer Science, Systems and Communications of the University of Milano-Bicocca, where I'm affiliated with the [MUDI lab](#). My position stems from the ReGAINs Departmental Excellence project "Reducing the Gap between Artificial Intelligence and Society", and my research is mostly focused on the development and analysis of trustworthy AI, with the goal of developing approaches aimed at guaranteeing robustness, fairness, transparency, correctness and security of the results produced by Artificial Intelligence systems, especially in the presence of uncertainty, ambiguity and variability of the data and anomalies.

#### Researcher

IRCCS Ospedale Galeazzi Sant-Ambrogio (Milano, Italia), Scientific Direction

15/11/2022 -

My activity focuses on the study and development of robust and interpretable artificial intelligence and data analysis methods for clinical decision making, with a specific focus on patient-reported outcomes' data and nutritional research. My research activity has led to the publication of several articles in impacted, international journals. My research activity has been tied to several research projects, funded by the Italian Ministry of Health, namely "Valutazione del paziente con frattura di femore con i dati regionali" (01/01/2025 - current), "Il supporto computazionale alle decisioni cliniche e del paziente: studi esplorativi e valutazioni empiriche" (15/12/2022 - 31/12/2024, funded by the Ricerca Corrente fund), "I-COMET- Infrastruttura tecnologica condivisa per lo sviluppo di modelli predittivi dell'invecchiamento, basati sull'Intelligenza Artificiale" (01/01/2024 - 31/12/2024, funded by the Convenzione Progetto di Rete), "Sistemi computazionali avanzati uncertainty-aware a supporto delle decisioni cliniche" (01/01/2025 - current, funded by the Ricerca Corrente fund) and "BOOST - Better Outcomes after Orthopedic Surgery with Telenutrition" (01/01/2025 - current, funded by Federated Innovation). I have also acted as principal data scientist for joint work with other institutes and hospitals, with particular reference to: Comitato Scientifico della Società Nazionale di Chimica Clinica e Medicina di Laboratorio (SIBIOC), resp. Dott.ssa Anna Carobene; IRCCS Casa Sollievo della Sofferenza - Opera Padre Pio, resp. Dott.ssa Alessandra Mangia.

#### Visiting Scientist

Fraunhofer Portugal Research Center for Assistive Information and Communication Solutions (Lisbon, Portugal), Supervisor: Prof. Hugo Gamboa.

16/01/2022 - 16/04/2022

The center belongs to the Fraunhofer Institute, the largest European applied research institute, and focuses on research on Artificial Intelligence, Human-Centered Design and Cyber-physical Systems. My activity in the research group focused on uncertainty quantification in machine learning, from both the theoretical and applied point of view in the context of time series classification, as well as the investigation of explainable AI and human-AI interaction approaches in the medical setting. My research activity has led to the publication of several articles in impacted, international journals as well as an

ongoing collaboration with the research group.

#### **Visiting Researcher**

Heudiasyc research lab (CNRS, section UMR-CNRS 7253), Université de Technologie de Compiègne (Compiègne, France), Supervisor: Prof. Thierry Denoeux

18/09/2021 - 18/12/2021

The lab is a joint research structure between the Université de Technologie de Compiègne (a member of the Sorbonne Alliance) and the French CNRS, whose research activity focuses on theoretical computer science, robotics and artificial intelligence, with a strong focus on uncertainty representation and management. My research activity focused on the study of uncertainty representation formalisms, such as rough sets and imprecise probabilities, both in regard to their theoretical foundations and their applications in Machine Learning, with specific reference to clustering problems. The research activity has led to the publication of several articles in impacted, international conferences and journals, as well as an ongoing collaboration with the research group (which also includes the joint organization of workshops and conferences).

#### **Clinical Data Scientist**

Link-Up, Deloitte Italy (Milano, Italy)

01/11/2018 - 31/05/2019

I worked as a machine learning and database engineer at Link Up (a start-up focusing on consulting services for hospitals), which was later acquired by Deloitte Italy. In particular, I was the head of a small team (2 data scientists and 1 biomedical engineer) devoted to database/data warehouse design and machine learning development consulting for different hospitals and clinics in Italy and Europe.

#### **Habilitations and Additional Qualifications**

##### **Abilitazione Scientifica Nazionale - II Fascia (Associate Professor) - Settore 01/B1 (Informatica)**

15/07/2024 - 15/07/2036

##### **Abilitazione Scientifica Nazionale - II Fascia (Associate Professor) - Settore 09/H1 (Sistemi di Elaborazione delle Informazioni)**

13/11/2025 - 13/11/2037

##### **Teaching Qualification in Antropo-Psycho-Pedagogical Disciplines**

01/01/2019 - 31/04/2019

24 ETCS - Recognized by the Italian Ministry of Education

Topics: Special Needs Education, Intercultural Education, Educational Planning and Evaluation Methodologies

#### **Doctoral Degrees**

##### **PhD in Computer Science**

Università degli Studi di Milano-Bicocca

27/02/2023

Grade: Approvato con Lode

Thesis title: Robust Learning Methods for Imprecise Data and Cautious Inference

Thesis reviewers: Sébastien Destercke, Senior Researcher, CNRS; Dominik Ślęzak, Full Professor, University of Warsaw

#### **Academic Degrees**

##### **Master Degree in Computer Science**

Università degli Studi di Milano-Bicocca

18/10/2017

Grade: 110L/110

##### **Bachelor Degree in Computer Science**

Università degli Studi di Milano-Bicocca

23/07/2015

## Didactic Activity

### **Uncertainty Management in Knowledge Representation and Machine Learning**

Lecturer

Università degli Studi di Milano-Bicocca, PhD in Computer Science

1.5 CFU (12 hours)

a.y. 2024/2025

### **A Primer on Machine Learning for Biologists**

Lecturer

Università degli Studi di Milano-Bicocca, PhD in Translational and Molecular Medicine

4 hours

a.y. 2023/2024, 2024/2025

### **Sistemi Complessi e Incerti**

Lecturer (Practical class)

Università degli Studi di Milano-Bicocca, MSc in Computer Science

1 CFU (10 hours)

a.y. 2022/2023, 2023/2024, 2024/2025, 2025/2026

### **Decision Support Systems and Advanced Data Management**

Lecturer (Advanced Data Management module)

Lecturer (Decision Support Systems module)

Università degli Studi di Milano Bicocca, MSc in Artificial Intelligence for Science and Technology

3 CFU (28 hours, Advanced Data Management) + 1 CFU (12 hours, Decision Support Systems)

a.y. 2022/2023, 2023/2024, 2024/2025, 2025/2026

### **Fuzzy Systems and Evolutionary Computing**

Lecturer (Laboratory)

Università degli Studi di Milano Bicocca, BSc in Artificial Intelligence

2 CFU (24 hours)

a.y. 2022/2023, 2023/2024, 2024/2025, 2025/2026

### **Linguaggi e Computabilità**

Laboratory Tutor

Università degli Studi di Milano Bicocca, BSc in Computer Science

30 hours

a.y. 2019/2020, 2020/2021

### **Decisione, Benessere Digitale ed Intelligenza Artificiale**

Lecturer

Università degli Studi di Milano-Bicocca, Second Level Master Program in Nudge e Politiche Pubbliche

4 hours

a.y. 2020/2021

### **Supervision of Master-level Students**

Supervision of several Master-level theses, for the MSc in Computer Science, MSc in Artificial Intelligence, MSc in Data Science, MA in Theory and Technology for Communication. Supervised theses topics: machine learning, learning theory, data science and data visualization, health informatics.

### **Supervision of Bachelor-level Students**

Supervision of several Bachelor-level theses for the BSc in Computer Science, BSc in Artificial Intelligence of Università degli Studi di Milano-Bicocca. Supervised theses topics: machine learning, human-computer interaction, data science and data visualization, health informatics, web development.

## Research Projects

### **Sistemi computazionali avanzati uncertainty-aware a supporto delle decisioni cliniche**

01/01/2025 - current

Funding body: Grant Ricerca Corrente, Italian Ministry of Health

Affiliation: IRCCS Ospedale Galeazzi Sant'Ambrogio, Scientific Direction

Role: Scientific responsibility of the project. The aim of the project is to develop, validate and deploy computational systems based on machine learning methodologies to support clinical decision-making. The novelty of the project is the focus on data quality and robustness of the models, as well on the management of clinical uncertainty and variability, ranging from the modeling and incorporation of such uncertainty in model design, to uncertainty communication

### **CCR-2020-23670245 I-COMET "Infrastruttura tecnologica condivisa per lo sviluppo di modelli predittivi dell'invecchiamento, basati sull'Intelligenza Artificiale"**

01/01/2024 - 31/12/2024

Funding body: Grant "Convenzione Progetto di Rete" (Rete AGING), Italian Ministry of Health

Principal Investigator: INRCA Ancona

Affiliation: IRCCS Ospedale Galeazzi Sant'Ambrogio, Scientific Direction

Role: Scientific responsibility for machine learning and data science activities for the WP of IRCCS Ospedale Galeazzi Sant'Ambrogio, as well as organizational responsibility for coordination with the involved research institutes and industrial partners. The project was funded by the "Convenzione Progetto di Rete" (Rete AGING) grant of the Italian Ministry of Health. As responsible for the data science activities at the IRCCS Ospedale Galeazzi Sant'Ambrogio I've been leader of a research group that also enrolled a junior researcher and a technician. The scientific aim of the research project was the development of a data sharing architecture, enabling data pooling and federated learning and analysis of data, as well as the investigation of how machine learning techniques can be applied to study and characterize aging-related multi-morbidity and fragility. My work in the project has led to the publication of 2 journal articles.

### **InXAI - Interaction with eXplainable Artificial Intelligence in (medical) Decision making**

01/11/2023 - current

Funding body: Bando PRIN 2022 PNRR, Italian Ministry of University and Research

Principal Investigator: Ass. Prof. Federico Cabitza

Affiliation: University of Milano-Bicocca; IRCCS Ospedale Galeazzi Sant'Ambrogio, Scientific Direction

Role: Contributor to the writing of the research proposal (with specific reference to the scientific background and content, as well as budgeting). Collaborator for Work Packages 1 and 4. The aim of the project is to investigate eXplainable Artificial Intelligence techniques in decision support systems from a methodological point of view, focusing on uncertainty quantification and explanation methods as a way to provide support to human decision-makers, and their impact in clinical decision making. The research project has so far led to the publication of 4 scientific articles as well as the organization of a workshop on "Calibrating Trust in XAI" at the 2nd International Conference on eXplainable AI (XAI 2024), of which I have been one of the co-organizers.

### **Il supporto computazionale alle decisioni cliniche e del paziente: studi esplorativi e valutazioni empiriche**

15/12/2022 - current

Funding body: Grant Ricerca Corrente, Italian Ministry of Health

Affiliation: IRCCS Ospedale Galeazzi Sant'Ambrogio, Scientific Direction

Role: Scientific responsibility of the project, as well as organizational responsibility for coordination with the involved research institutes and industrial partners. The aim of the project is to investigate the development and application of decision support systems based on modern artificial intelligence methods for supporting clinical decisions. The project has so far led to the publication of 7 scientific articles (5 in impacted, international journals and 2 in scientific conferences), with 3 additional articles under peer review in impact, international journals.

## Scientific Awards or Participation in Scientific Societies

### **EurAI Best Dissertation Award**

Awarding Body: European Association on Artificial Intelligence (EurAI)

Date: 21/8/2024

Description: My PhD thesis has been awarded the 2023 EurAI Artificial Intelligence Dissertation Award. The prize is awarded to young scholars as a recognition of significant contribution to the field of Artificial Intelligence. The award amounts to a grant (1500€) awarded from the EurAI association, together with an invited lecture at the flagship conference European Conference on Artificial Intelligence (ECAI), CORE: A

### **ACM SIGCHI Gary Marsden Award**

Awarding Body: ACM Special Interest Group on Computer-Human Interaction

Date: 1/4/2023

Description: The award amount to a money grant (1500\$) awarded to young scholars based on a competitive evaluation of the research contributions and curriculum vitae. The grant was awarded in relationship to the paper "AI Shall Have No Dominion: on How to Measure Technology Dominance in AI-supported Human Decision Making" presented at the ACM Conference on Human Factors in Computing Systems (CHI 2023), CORE: A\*

### **Early Career Researcher Award**

Awarding Body: International Journal of Approximate Reasoning

Date: 27/10/2022

Description: The award is given by the International Journal of Approximate Reasoning, sponsored by Elsevier, as a recognition to young scholars for their contributions to the field of uncertainty representation and management. The award amounts to a money grant (500€) and invitation to publish in a special issue of the journal.

### **2022 BFAS Student Grant**

Awarding Body: Belief Functions and Applications Society

Date: 1/10/2022

Description: The grant consisted in a payment of the registration fees to the flagship conference BFAS 2022 as well as admission into the scientific society. The grant was awarded based on a competitive evaluation of candidates' curriculum vitae.

### **Best Paper**

Venue: 2nd World Conference on eXplainable Artificial Intelligence (XAI 2024)

Date: 17/7/2024

Title: Explanations Considered Harmful: The Impact of Misleading Explanations on Accuracy in Hybrid Human-AI Decision Making"

### **Best Student Paper**

Venue: 7th International Conference on Belief Functions Theory and Applications (BFAS 2022)

Date: 27/10/2022

Title: A Distributional Approach for Soft Clustering Comparison and Evaluation

### **Outstanding Paper**

Venue: 19th IPMU International Conference (IPMU 2022), CORE: C

Date: 14/7/2022

Title: Rough-set based Genetic Algorithms for weakly supervised feature selection

### **Best Student Paper**

Venue: 2021 International Joint Conference on Rough Sets (IJCRS 2021), CORE: C

Date: 24/9/2021

Title: Feature Reduction and Disambiguation in Learning from Fuzzy Labels using Rough Sets

### **Best Student Paper**

Venue: 34th IEEE CBMS International Symposium on Computer-Based Medical Systems (CBMS)

Date: 9/6/2021

Title: Prediction of ICU admission for COVID-19 patients: a Machine Learning approach based on Complete

Blood Count data

**Best Student Paper**

Venue: 5th ACM International Conference on Medical and Health Informatics (ICMHI 2021)

Date: 16/5/2021

Title: Assessing the impact of medical AI: a survey of physicians' perceptions

**Best Reviewer**

Awarding Body: Conference on Uncertainty in Artificial Intelligence (UAI)

Date: 2022, 2023, 2024

**Secretary**

08/04/2025 - 2027

Organization: International Rough Set Society

Description: The nomination was based on a voting process among all members of the society

**Adjunct PhD Board Member**

Date: 2023

Description: Adjunct Member of the PhD Board of the Institute of Mathematics and Statistics della University of São Paulo, Doctorate Degree in Computer Science, and Member of the Examining Committee for the PhD Thesis of Joao Barguil

**Membership**

Date: 1/3/2023 - current

Organization: ACM Special Interest Group on Computer-Human Interaction

**Membership**

Date: 1/7/2023 - current

Organization: Associazione Italiana per l'Intelligenza Artificiale (AIxIA)

**Membership:**

Date: 1/10/2022 - current

Organization: Belief Functions and Applications Society (BFAS)

**Membership**

Date: 9/11/2020 - current

Organization: International Rough Set Society

**Scientific Publications**

Campagner, A., Fregosi, C., Natali, C., & Cabitza, F. (2026). Under what influence: Measuring AI influence to fit user profiles in decision-making. *International Journal of Human-Computer Studies*, 103763.

Campagner, A., Lazzeroni, M., Pizzi, C., Sattin, C., Buccichini, G., Del Fabbro, M., ... & Cabitza, F. (2026). Weakly supervised treatment selection: Machine learning models for appropriate surgical planning of submandibular stones. *Computers in Biology and Medicine*, 202, 111416.

Chicco, D., Campagner, A., Spagnolo, A., Ciucci, D., & Jurman, G. (2025). The silhouette coefficient and the davies-bouldin index are more informative than dunn index, calinski-harabasz index, shannon entropy, and gap statistic for unsupervised clustering internal evaluation of two convex clusters. *PeerJ Computer Science*, 11, e3309.

Campagner, A., Arredondo, F., Ciucci, D., & Cabitza, F. (2025). An Evidence-Theoretic Framework for Online Learning from Expert Advice. *FRONTIERS IN ARTIFICIAL INTELLIGENCE AND APPLICATIONS*, 413, 5067-5074.

Campagner, A. (2025). Missing but Not Missed: On Learnability Under Imputation. In *Joint European Conference on Machine Learning and Knowledge Discovery in Databases* (pp. 344-361). Cham: Springer Nature Switzerland.

- Cabitza, F., Campagner, A., Fregosi, C., Cameli, M., Gallazzi, E., Sconfienza, L. M., Tontini, G. E. (2025). Five Degrees of Separation: Investigating the Unexpected Potential of Displaced Human-AI Collaboration Protocols for Apter AI Support. *Proceedings of the ACM on Human-Computer Interaction*, 9(7), 1-28.
- Campagner, A., Biganzoli, E. M., Balsano, C., Cereda, C., Cabitza, F. (2025). Modeling Unknowns: A Vision for Uncertainty-Aware Machine Learning in Healthcare. *International Journal of Medical Informatics*, 106014.
- Lopiano, G., Campagner, A., Cereda, C., Carelli, S., Cabitza, F. (2025). Explainable Machine Learning for Neonatal Screening: A Fast&Frugal Decision Tree for Rare Metabolic Disease Detection. In *International Conference on Artificial Intelligence in Medicine* (pp. 252-261). Cham: Springer Nature Switzerland.
- Folgado, D., Famiglini, L., Campagner, A., Dores, H., Barandas, M., Gamboa, H., Cabitza, F. (2025). Conformal Prediction for ECG Interpretation: A Study on Human-AI Collaboration in Clinical Decision Support. In *International Conference on Artificial Intelligence in Medicine* (pp. 140-149). Cham: Springer Nature Switzerland.
- Campagner, Andrea, Ciucci, Davide (2025). softpy: A User-Friendly Python Library for Soft Computing. GECCO Companion 2025.
- Campagner, Andrea, Marconi, Luca, Bianchi, Edoardo, Arosio, Beatrice, Rossi, Paolo, Annoni, Giorgio, Lucchi, Tiziano Angelo, Montano, Nicola, Cabitza, Federico (2025). Uncovering hidden subtypes in dementia: An unsupervised machine learning approach to dementia diagnosis and personalization of care. *Journal of Biomedical Informatics*, 165, 104799. doi: 10.1016/j.jbi.2025.104799
- Campagner, Andrea, Agnello, Luisa, Carobene, Anna, Padoan, Andrea, Del Ben, Fabio, Locatelli, Massimo, Plebani, Mario, Ognibene, Agostino, Lorubbio, Maria, De Vecchi, Elena, Cortegiani, Andrea, Piva, Elisa, Poz, Donatella, Curcio, Francesco, Cabitza, Federico, Ciaccio, Marcello (2025). Complete Blood Count and Monocyte Distribution Width-Based Machine Learning Algorithms for Sepsis Detection: Multicentric Development and External Validation Study. *Journal of Medical Internet Research*, 27(1), e55492. doi: 10.2196/55492
- Salvi, Massimo, Seoni, Silvia, Campagner, Andrea, Gertych, Arkadiusz, Acharya, Rajendra, Molinari, Fabio, Cabitza, Federico (2025). Explainability and uncertainty: Two sides of the same coin for enhancing the interpretability of deep learning models in healthcare. *International Journal of Medical Informatics*, 105846. doi: 10.1016/j.ijmedinf.2025.105846
- Baroncini, Alice, Campagner, Andrea, Cabitza, Federico, Langella, Francesco, Barile, Francesca, Bellosta-López, Pablo, Compagnone, Domenico, Cecchinato, Roberto, Damilano, Marco, Redaelli, Andrea, Vanni, Daniele, Berjano, Pedro. (2025). The use of machine learning for the prediction of response to follow-up in spine registries. *International Journal of Medical Informatics*, 105752. doi: 10.1016/j.ijmedinf.2024.105752
- Briguglio, Matteo, Campagner, Andrea, Langella, Francesco, Cecchinato, Riccardo, Damilano, Marco, Bellosta-López, Pablo, Crespi, Tiziano, De Vecchi, Elena, Latella Marialetizia, Barone, Giuseppe, Scaramuzza, Laura, Bassani, Roberto, Luca, Andrea, Brayda-Bruno, Marco, Wainwright, Thomas, Middleton, Robert, Lombardi, Giovanni, Cabitza, Federico, Banfi, Giuseppe, Berjano, Pedro (2025). Malnutrition and Disability: A Retrospective Study on 2258 Adult Patients Undergoing Elective Spine Surgery. *Medicina*, 61(3), 413. doi: 10.3390/medicina61030413
- Campagner, Andrea, (2024). Learning from fuzzy labels: Theoretical issues and algorithmic solutions. *International Journal of Approximate Reasoning* 171. doi: 10.1016/j.ijar.2023.108969
- Campagner, Andrea, Barandas, Marilia, Folgado, Duarte, Gamboa, Hugo, Cabitza, Federico, (2024). Ensemble Predictors: Possibilistic Combination of Conformal Predictors for Multivariate Time Series Classification. *IEEE Transactions on Pattern Analysis and Machine Intelligence* 46. doi: 10.1109/TPAMI.2024.3388097

Campagner, Andrea, Milella, Frida, Ciucci, Davide, Cabitza, Federico, (2024). Three-way decision in machine learning tasks: a systematic review. *Artificial Intelligence Review* 57. doi: 10.1007/s10462-024-10845-9

Boffa, Stefania, Campagner, Andrea, Ciucci, Davide, (2024). Partially-defined equivalence relations: Relationship with orthopartitions and connection to rough sets. *Information Sciences* 657. doi: 10.1016/j.ins.2023.119941

Cabitza, Federico, Campagner, Andrea, (2024). Towards Better Ways to Assess Predictive Computing in Medicine: On Reliability, Robustness, and Utility. *Big Data Analysis and Artificial Intelligence for Medical Sciences*. doi: 10.1002/9781119846567.ch14

Barandas, Marília, Famiglini, Lorenzo, Campagner, Andrea, Folgado, Duarte, Simão, Raquel, Cabitza, Federico, Gamboa, Hugo, (2024). Evaluation of uncertainty quantification methods in multi-label classification: A case study with automatic diagnosis of electrocardiogram. *Information Fusion* 101. doi: 10.1016/j.inffus.2023.101978

Campagner, Andrea, Milella, Frida, Banfi, Giuseppe, Cabitza, Federico, (2024). Second opinion machine learning for fast-track pathway assignment in hip and knee replacement surgery: the use of patient-reported outcome measures. *BMC Medical Informatics and Decision Making* 24. doi: 10.1186/s12911-024-02602-3

Famiglini, Lorenzo, Campagner, Andrea, Barandas, Marilia, La Maida, Giovanni Andrea, Gallazzi, Enrico, Cabitza, Federico, (2024). Evidence-based XAI: An empirical approach to design more effective and explainable decision support systems. *Computers in Biology and Medicine* 170. doi: 10.1016/j.compbio.2024.108042

Cabitza, Federico, Famiglini, Lorenzo, Campagner, Andrea, Sconfienza, Luca Maria, Fusco, Stefano, Caccavella, Valerio, Gallazzi, Enrico, (2024). Dissimilar Similarities: Comparing Human and Statistical Similarity Evaluation in Medical AI. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 14986 LNAI. doi: 10.1007/978-3-031-68208-7\_16

Cabitza, Federico, Fregosi, Caterina, Campagner, Andrea, Natali, Chiara, (2024). Explanations Considered Harmful: The Impact of Misleading Explanations on Accuracy in Hybrid Human-AI Decision Making. *Communications in Computer and Information Science* 2156 CCIS. doi: 10.1007/978-3-031-63803-9\_14

Cabitza, Federico, Natali, Chiara, Famiglini, Lorenzo, Campagner, Andrea, Caccavella, Valerio, Gallazzi, Enrico, (2024). Never tell me the odds: Investigating pro-hoc explanations in medical decision making. *Artificial Intelligence in Medicine* 150. doi: 10.1016/j.artmed.2024.102819

Campagner, Andrea, Famiglini, Lorenzo, Carobene, Anna, Cabitza, Federico, (2023). Everything is varied: The surprising impact of instantial variation on ML reliability. *Applied Soft Computing* 146. doi: 10.1016/j.asoc.2023.110644

Cabitza\*, Federico, Campagner\*, Andrea, Basile, Valerio, (2023). Toward a Perspectivist Turn in Ground Truthing for Predictive Computing. *Proceedings of the 37th AAAI Conference on Artificial Intelligence, AAAI 2023* 37.

Kieseberg, Peter, Weippl, Edgar, Tjoa, A. Min, Cabitza, Federico, Campagner, Andrea, Holzinger, Andreas, (2023). Controllable AI - An Alternative to Trustworthiness in Complex AI Systems?. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 14065 LNCS. doi: 10.1007/978-3-031-40837-3\_1

Campagner, Andrea, Famiglini, Lorenzo, Arosio, Beatrice, Rossi, Paolo, Annoni, Giorgio, Cabitza, Federico, (2023). Biomarkers for Mixed Dementia: a hard bone to bite? Preliminary analyses and promising results for a debated topic. *CEUR Workshop Proceedings* 3623.

Campagner, Andrea, (2023). Credal Learning: Weakly Supervised Learning from Credal Sets. *Frontiers in Artificial Intelligence and Applications* 372. doi: 10.3233/FAIA230287

Campagner, Andrea, Milella, Frida, Guida, Stefania, Bernareggi, Susan, Banfi, Giuseppe, Cabitza, Federico, (2023). Assessment of Fast-Track Pathway in Hip and Knee Replacement Surgery by Propensity Score Matching on Patient-Reported Outcomes. *Diagnostics* 13. doi: 10.3390/diagnostics13061189

Boffa, Stefania, Campagner, Andrea, Ciucci, Davide, Yao, Yiyu, (2023). Aggregation Operators on Shadowed Sets Deriving from Conditional Events and Consensus Operators. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 14481 LNAI. doi: 10.1007/978-3-031-50959-9\_14

Cabitza, Federico, Campagner, Andrea, Famiglini, Lorenzo, Natali, Chiara, Caccavella, Valerio, Gallazzi, Enrico, (2023). Let Me Think! Investigating the Effect of Explanations Feeding Doubts About the AI Advice. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 14065 LNCS. doi: 10.1007/978-3-031-40837-3\_10

Holzinger, Andreas, Kieseberg, Peter, Cabitza, Federico, Campagner, Andrea, Weippl, Edgar, Tjoa, A. Min, (2023). Preface. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 14065 LNCS.

Natali, Chiara, Famiglini, Lorenzo, Campagner, Andrea, La Maida, Giovanni Andrea, Gallazzi, Enrico, Cabitza, Federico, (2023). Color Shadows 2: Assessing the Impact of XAI on Diagnostic Decision-Making. *Communications in Computer and Information Science* 1901 CCIS. doi: 10.1007/978-3-031-44064-9\_33

Cabitza, Federico, Campagner, Andrea, Natali, Chiara, (2023). Demo: Decision Support System Quality Assessment Tool. *ACM International Conference Proceeding Series*. doi: 10.1145/3605390.3610825

Campagner, Andrea, Ciucci, Davide, Denœux, Thierry, (2023). A distributional framework for evaluation, comparison and uncertainty quantification in soft clustering. *International Journal of Approximate Reasoning* 162. doi: 10.1016/j.ijar.2023.109008

Milella, Frida, Natali, Chiara, Scantamburlo, Teresa, Campagner, Andrea, Cabitza, Federico, (2023). The Impact of Gender and Personality in Human-AI Teaming: The Case of Collaborative Question Answering. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 14143 LNCS. doi: 10.1007/978-3-031-42283-6\_19

Famiglini, Lorenzo, Campagner, Andrea, Cabitza, Federico, (2023). Towards a Rigorous Calibration Assessment Framework: Advancements in Metrics, Methods, and Use. *Frontiers in Artificial Intelligence and Applications* 372. doi: 10.3233/FAIA230327

Cabitza\*, Federico, Campagner\*, Andrea, Angius, Riccardo, Natali, Chiara, Reverberi, Carlo, (2023). AI Shall Have No Dominion: on How to Measure Technology Dominance in AI-supported Human decision-making. *Conference on Human Factors in Computing Systems - Proceedings*. doi: 10.1145/3544548.3581095

Schneeberger, David, Röttger, Richard, Cabitza, Federico, Campagner, Andrea, Plass, Markus, Müller, Heimo, Holzinger, Andreas, (2023). The Tower of Babel in Explainable Artificial Intelligence (XAI). *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 14065 LNCS. doi: 10.1007/978-3-031-40837-3\_5

Cabitza, Federico, Campagner, Andrea, Ronzio, Luca, Cameli, Matteo, Mandoli, Giulia Elena, Pastore, Maria Concetta, Sconfienza, Luca Maria, Folgado, Duarte, Barandas, Marília, Gamboa, Hugo, (2023). Rams, hounds and white boxes: Investigating human-AI collaboration protocols in medical diagnosis. *Artificial Intelligence in Medicine* 138. doi: 10.1016/j.artmed.2023.102506

Cabitza, Federico, Campagner, Andrea, Natali, Chiara, Parimbelli, Enea, Ronzio, Luca, Cameli, Matteo, (2023). Painting the Black Box White: Experimental Findings from Applying XAI to an ECG Reading Setting. *Machine Learning and Knowledge Extraction* 5. doi: 10.3390/make5010017

Cabitza, Federico, Campagner, Andrea, Malgieri, Gianclaudio, Natali, Chiara, Schneeberger, David, Stoeger, Karl, Holzinger, Andreas, (2023). Quod erat demonstrandum? - Towards a typology of the concept of explanation for the design of explainable AI. *Expert Systems with Applications* 213. doi:

10.1016/j.eswa.2022.118888

Campagner,

Andrea, Ciucci, Davide, Denœux, Thierry, (2023). A general framework for evaluating and comparing soft clusterings. *Information Sciences* 623. doi: 10.1016/j.ins.2022.11.114

Campagner, Andrea, Ciucci, Davide, Cabitza, Federico, (2023). Aggregation models in ensemble learning: A large-scale comparison. *Information Fusion* 90. doi: 10.1016/j.inffus.2022.09.015

Campagner, Andrea, Famigliani, Lorenzo, Cabitza, Federico, (2022). A Confidence Interval-Based Method for Classifier Re-Calibration. *Studies in Health Technology and Informatics* 294. doi: 10.3233/SHTI220413

Bento, Nuno, Rebelo, Joana, Barandas, Marília, Carreiro, André V., Campagner, Andrea, Cabitza, Federico, Gamboa, Hugo, (2022). Comparing Handcrafted Features and Deep Neural Representations for Domain Generalization in Human Activity Recognition. *Sensors* 22. doi: 10.3390/s22197324

Campagner, Andrea, Ciucci, Davide, Dorigatti, Valentina, (2022). Uncertainty representation in dynamical systems using rough set theory. *Theoretical Computer Science* 908. doi: 10.1016/j.tcs.2021.11.009

Campagner, Andrea, Ciucci, Davide, Denœux, Thierry, (2022). Belief functions and rough sets: Survey and new insights. *International Journal of Approximate Reasoning* 143. doi: 10.1016/j.ijar.2022.01.011

Cabitza, Federico, Campagner, Andrea, Conte, Enrico, (2022). Comparative Assessment of Two Data Visualizations to Communicate Medical Test Results Online. *Proceedings of the International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications* 3. doi: 10.5220/0010968800003124

Campagner, Andrea, Lienen, Julian, Hüllermeier, Eyke, Ciucci, Davide, (2022). Scikit-Weak: A Python Library for Weakly Supervised Machine Learning. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 13633 LNAI. doi: 10.1007/978-3-031-21244-4\_5

Campagner, Andrea, Ciucci, Davide, Denœux, Thierry, (2022). A Distributional Approach for Soft Clustering Comparison and Evaluation. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 13506 LNAI. doi: 10.1007/978-3-031-17801-6\_1

Campagner, Andrea, Sternini, Federico, Cabitza, Federico, (2022). Decisions are not all equal—Introducing a utility metric based on case-wise raters' perceptions. *Computer Methods and Programs in Biomedicine* 221. doi: 10.1016/j.cmpb.2022.106930

Campagner, Andrea, Famigliani, Lorenzo, Cabitza, Federico, (2022). Re-calibrating Machine Learning Models Using Confidence Interval Bounds. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 13408 LNAI. doi: 10.1007/978-3-031-13448-7\_11

Boffa, Stefania, Campagner, Andrea, Ciucci, Davide, Yao, Yiyu, (2022). Aggregation operators on shadowed sets. *Information Sciences* 595. doi: 10.1016/j.ins.2022.02.046

Campagner, Andrea, Ciucci, Davide, (2022). Rough-set Based Genetic Algorithms for Weakly Supervised Feature Selection. *Communications in Computer and Information Science* 1602 CCIS. doi: 10.1007/978-3-031-08974-9\_60

Carobene, Anna, Campagner, Andrea, Uccheddu, Christian, Banfi, Giuseppe, Vidali, Matteo, Cabitza, Federico, (2022). The multicenter European Biological Variation Study (EuBIVAS): a new glance provided by the Principal Component Analysis (PCA), a machine learning unsupervised algorithms, based on the basic metabolic panel linked measurands. *Clinical Chemistry and Laboratory Medicine* 60. doi: 10.1515/cclm-2021-0599

Ciucci, Davide, Boffa, Stefania, Campagner, Andrea, (2022). Orthopartitions in Knowledge Representation and Machine Learning. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial*

Intelligence and Lecture Notes in Bioinformatics) 13633 LNAI. doi: 10.1007/978-3-031-21244-4\_1

Famiglini, Lorenzo, Campagner, Andrea, Carobene, Anna, Cabitza, Federico, (2022). A robust and parsimonious machine learning method to predict ICU admission of COVID-19 patients. *Medical and Biological Engineering and Computing*. doi: 10.1007/s11517-022-02543-x

Cabitza, Federico, Campagner, Andrea, Mattioli, Martina, (2022). The unbearable (technical) unreliability of automated facial emotion recognition. *Big Data and Society* 9. doi: 10.1177/20539517221129549

Cabitza, Federico, Campagner, Andrea, Famiglini, Lorenzo, Gallazzi, Enrico, La Maida, Giovanni Andrea, (2022). Color Shadows (Part I): Exploratory Usability Evaluation of Activation Maps in Radiological Machine Learning. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 13480 LNCS. doi: 10.1007/978-3-031-14463-9\_3

Campagner, Andrea, Ciucci, Davide, (2022). Three-way Learnability: A Learning Theoretic Perspective on Three-way Decision. *Proceedings of the 17th Conference on Computer Science and Intelligence Systems, FedCSIS 2022*. doi: 10.15439/2022F18

Cabitza, Federico, Campagner, Andrea, Famiglini, Lorenzo, (2022). Global Interpretable Calibration Index, a New Metric to Estimate Machine Learning Models' Calibration. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 13480 LNCS. doi: 10.1007/978-3-031-14463-9\_6

Neves, Inês, Folgado, Duarte, Santos, Sara, Barandas, Marília, Campagner, Andrea, Ronzio, Luca, Cabitza, Federico, Gamboa, Hugo, (2021). Interpretable heartbeat classification using local model-agnostic explanations on ECGs. *Computers in Biology and Medicine* 133. doi: 10.1016/j.compbimed.2021.104393

Ronzio, Luca, Campagner, Andrea, Cabitza, Federico, Gensini, Gian Franco, (2021). Unity is intelligence: a collective intelligence experiment on ecg reading to improve diagnostic performance in cardiology. *Journal of Intelligence* 9. doi: 10.3390/jintelligence9020017

Campagner, Andrea, Cabitza, Federico, Berjano, Pedro, Ciucci, Davide, (2021). Three-way decision and conformal prediction: Isomorphisms, differences and theoretical properties of cautious learning approaches. *Information Sciences* 579. doi: 10.1016/j.ins.2021.08.009

Cabitza, Federico, Campagner, Andrea, Cavosi, Valentina, (2021). Assessing the impact of medical AI: A survey of physicians' perceptions. *ACM International Conference Proceeding Series*. doi: 10.1145/3472813.3473195

Cabitza, Federico, Campagner, Andrea, Ferrari, Davide, Di Resta, Chiara, Ceriotti, Daniele, Sabetta, Eleonora, Colombini, Alessandra, De Vecchi, Elena, Banfi, Giuseppe, Locatelli, Massimo, Carobene, Anna, (2021). Development, evaluation, and validation of machine learning models for COVID-19 detection based on routine blood tests. *Clinical Chemistry and Laboratory Medicine* 59. doi: 10.1515/cclm-2020-1294

Cabitza, Federico, Campagner, Andrea, Soares, Felipe, García de Guadiana-Romualdo, Luis, Challa, Feyissa, Sulejmani, Adela, Seghezzi, Michela, Carobene, Anna, (2021). The importance of being external: methodological insights for the external validation of machine learning models in medicine. *Computer Methods and Programs in Biomedicine* 208. doi: 10.1016/j.cmpb.2021.106288

Campagner, Andrea, Carobene, Anna, Cabitza, Federico, (2021). External validation of Machine Learning models for COVID-19 detection based on Complete Blood Count. *Health Information Science and Systems* 9. doi: 10.1007/s13755-021-00167-3

Cabitza, Federico, Campagner, Andrea, (2021). The need to separate the wheat from the chaff in medical informatics: Introducing a comprehensive checklist for the (self)-assessment of medical AI studies. *International Journal of Medical Informatics* 153. doi: 10.1016/j.ijmedinf.2021.104510

Cabitza, Federico, Campagner, Andrea, Sconfienza, Luca Maria, (2021). Studying human-AI collaboration protocols: the case of the Kasparov's law in radiological double reading. *Health Information Science and Systems* 9. doi: 10.1007/s13755-021-00138-8

Campagner, Andrea, (2021). Learnability in 'Learning from Fuzzy Labels'. IEEE International Conference on Fuzzy Systems 2021-July. doi: 10.1109/FUZZ45933.2021.9494534

Cabitzza, Federico, Campagner, Andrea, Datteri, Edoardo, (2021). To Err is (only) Human. Reflections on How to Move from Accuracy to Trust for Medical AI. Lecture Notes in Information Systems and Organisation 51 LNISO. doi: 10.1007/978-3-030-87842-9\_4

Famiglini, Lorenzo, Bini, Giorgio, Carobene, Anna, Campagner, Andrea, Cabitzza, Federico, (2021). Prediction of ICU admission for COVID-19 patients: A machine learning approach based on complete blood count data. Proceedings - IEEE Symposium on Computer-Based Medical Systems 2021-June. doi: 10.1109/CBMS52027.2021.00065

Carobene, Anna, Campagner, Andrea, Sulejmani, Adela, Leoni, Valerio, Seghezzi, Michela, Buoro, Sabrina, Cabitzza, Federico, (2021). Identification of SARS-CoV-2 positivity using machine learning methods on blood count data: External validation of state-of-the-art models.; [Identificazione di positività al SARS-CoV-2 attraverso metodi di Machine Learning sui dati dell'esame emocromocitometrico: Validazione esterna di modelli allo stato dell'arte]. *Biochimica Clinica* 45. doi: 10.19186/BC\_2021.033

Carobene, Anna, Sabetta, Eleonora, Monteverde, Elena, Locatelli, Massimo, Banfi, Giuseppe, Di Resta, Chiara, Guerranti, Roberto, Vidali, Matteo, Campagner, Andrea, Cabitzza, Federico, (2021). Machine Learning based on laboratory medicine test results in diagnosis and prognosis for COVID-19 patients: A systematic review.; [Tecniche di apprendimento automatico basato sui risultati di esami di medicina di laboratorio nella diagnosi e prognosi per i pazienti COVID-19: Una revisione sistematica]. *Biochimica Clinica* 45. doi: 10.19186/BC\_2021.046

Campagner, Andrea, Ciucci, Davide, (2021). Feature Selection and Disambiguation in Learning from Fuzzy Labels Using Rough Sets. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 12872 LNAI. doi: 10.1007/978-3-030-87334-9\_14

Campagner, Andrea, Ciucci, Davide, Svensson, Carl-Magnus, Figge, Marc Thilo, Cabitzza, Federico, (2021). Ground truthing from multi-rater labeling with three-way decision and possibility theory. *Information Sciences* 545. doi: 10.1016/j.ins.2020.09.049

Cabitzza, Federico, Campagner, Andrea, Simone, Carla, (2021). The need to move away from agential-AI: Empirical investigations, useful concepts and open issues. *International Journal of Human Computer Studies* 155. doi: 10.1016/j.ijhcs.2021.102696

Campagner, Andrea, Ciucci, Davide, Hüllermeier, Eyke, (2021). Rough set-based feature selection for weakly labeled data. *International Journal of Approximate Reasoning* 136. doi: 10.1016/j.ijar.2021.06.005

Campagner, Andrea, Conte, Enrico, Cabitzza, Federico, (2021). Weighted Utility: A Utility Metric Based on the Case-Wise Raters' Perceptions. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 12844 LNCS. doi: 10.1007/978-3-030-84060-0\_13

Brinati, Davide, Campagner, Andrea, Ferrari, Davide, Locatelli, Massimo, Banfi, Giuseppe, Cabitzza, Federico, (2020). Detection of COVID-19 Infection from Routine Blood Exams with Machine Learning: A Feasibility Study. *Journal of Medical Systems* 44. doi: 10.1007/s10916-020-01597-4

Campagner, Andrea, Berjano, Pedro, Lamartina, Claudio, Langella, Francesco, Lombardi, Giovanni, Cabitzza, Federico, (2020). Assessment and prediction of spine surgery invasiveness with machine learning techniques. *Computers in Biology and Medicine* 121. doi: 10.1016/j.compbimed.2020.103796

Campagner, Andrea, Cabitzza, Federico, Ciucci, Davide, (2020). Three-Way Decision for Handling Uncertainty in Machine Learning: A Narrative Review. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 12179 LNAI. doi: 10.1007/978-3-030-52705-1\_10

Campagner, Andrea, Sconfienza, Luca, Cabitzza, Federico, (2020). H-Accuracy, an alternative metric to assess classification models in medicine. *Studies in Health Technology and Informatics* 270. doi: 10.3233/SHTI200159

- Campagner, Andrea, Ciucci, Davide, (2020). A Formal Learning Theory for Three-Way Clustering. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 12322 LNAI. doi: 10.1007/978-3-030-58449-8\_9
- Campagner, Andrea, Ciucci, Davide, Dorigatti, Valentina, (2020). Approximate Reaction Systems Based on Rough Set Theory. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 12179 LNAI. doi: 10.1007/978-3-030-52705-1\_4
- Campagner, Andrea, Ciucci, Davide, Hüllermeier, Eyke, (2020). Feature Reduction in Superset Learning Using Rough Sets and Evidence Theory. Communications in Computer and Information Science 1237 CCIS. doi: 10.1007/978-3-030-50146-4\_35
- Campagner, Andrea, Cabitza, Federico, (2020). Introducing new measures of inter- And intra-rater agreement to assess the reliability of medical ground truth. Studies in Health Technology and Informatics 270. doi: 10.3233/SHTI200167
- Seveso, Andrea, Campagner, Andrea, Ciucci, Davide, Cabitza, Federico, (2020). Ordinal labels in machine learning: A user-centered approach to improve data validity in medical settings. BMC Medical Informatics and Decision Making 20. doi: 10.1186/s12911-020-01152-8
- Campagner, Andrea, Cabitza, Federico, Ciucci, Davide, (2020). The three-way-in and three-way-out framework to treat and exploit ambiguity in data. International Journal of Approximate Reasoning 119. doi: 10.1016/j.ijar.2020.01.010
- Cabitza, Federico, Campagner, Andrea, Albano, Domenico, Aliprandi, Alberto, Bruno, Alberto, Chianca, Vito, Corazza, Angelo, Pietto, Francesco Di, Gambino, Angelo, Gitto, Salvatore, Messina, Carmelo, Orlandi, Davide, Pedone, Luigi, Zappia, Marcello, Sconfienza, Luca Maria, (2020). The elephant in the machine: Proposing a new metric of data reliability and its application to a medical case to assess classification reliability. Applied Sciences (Switzerland) 10. doi: 10.3390/app10114014
- Campagner, Andrea, Dorigatti, Valentina, Ciucci, Davide, (2020). Entropy-based shadowed set approximation of intuitionistic fuzzy sets. International Journal of Intelligent Systems 35. doi: 10.1002/int.22287
- Cabitza, Federico, Campagner, Andrea, Sconfienza, Luca Maria, (2020). As if sand were stone. New concepts and metrics to probe the ground on which to build trustable AI. BMC Medical Informatics and Decision Making 20. doi: 10.1186/s12911-020-01224-9
- Cabitza, Federico, Campagner, Andrea, Zotti, Francesco Del, Ravizza, Alice, Sternini, Federico, (2020). All you need is higher accuracy? On the quest for minimum acceptable accuracy for medical artificial intelligence. Proceedings of the 12th IADIS International Conference e-Health 2020, EH 2020 - Part of the 14th Multi Conference on Computer Science and Information Systems, MCCSIS 2020.
- Carobene, Anna, Ferrari, Davide, Campagner, Andrea, Cabitza, Federico, Sabetta, Eleonora, Ceriotti, Daniele, Di Resta, Chiara, Locatelli, Massimo, (2020). Evidence of significant difference in key covid-19 biomarkers during the italian lockdown strategy. A retrospective study on patients admitted to a hospital emergency department in northern italy. Acta Biomedica 91. doi: 10.23750/abm.v91i4.10371
- Campagner, Andrea, Ciucci, Davide, Cabitza, Federico, (2020). Ensemble learning, social choice and collective intelligence: An experimental comparison of aggregation techniques. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 12256 LNAI. doi: 10.1007/978-3-030-57524-3\_5
- Campagner, Andrea, Cabitza, Federico, (2020). Back to the Feature: A Neural-Symbolic Perspective on Explainable AI. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 12279 LNCS. doi: 10.1007/978-3-030-57321-8\_3
- Cabitza, Federico, Campagner, Andrea, Ciucci, Davide, (2019). New Frontiers in Explainable AI: Understanding the GI to Interpret the GO. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 11713 LNCS. doi: 10.1007/978-3-030-

29726-8\_3

Campagner, Andrea, Cabitza, Federico, Ciucci, Davide, (2019). Exploring medical data classification with three-way decision trees. HEALTHINF 2019 - 12th International Conference on Health Informatics, Proceedings; Part of 12th International Joint Conference on Biomedical Engineering Systems and Technologies, BIOSTEC 2019.

Campagner, Andrea, Cabitza, Federico, Ciucci, Davide, (2019). Three-Way Classification: Ambiguity and Abstention in Machine Learning. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 11499 LNAI. doi: 10.1007/978-3-030-22815-6\_22

Cabitza, Federico, Campagner, Andrea, Ciucci, Davide, Seveso, Andrea, (2019). Programmed Inefficiencies in DSS-Supported Human Decision Making. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 11676 LNAI. doi: 10.1007/978-3-030-26773-5\_18

Campagner, Andrea, Ciucci, Davide, (2019). Orthopartitions and soft clustering: Soft mutual information measures for clustering validation. Knowledge-Based Systems 180. doi: 10.1016/j.knosys.2019.05.018

Campagner, Andrea, Ciucci, Davide, (2018). Three-way and semi-supervised decision tree learning based on orthopartitions. Communications in Computer and Information Science 854. doi: 10.1007/978-3-319-91476-3\_61

Campagner, Andrea, Ciucci, Davide, (2017). Measuring uncertainty in orthopairs. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 10369 LNAI. doi: 10.1007/978-3-319-61581-3\_38

## Editorial Activity

### Area Editor

Date: 01/01/2025

Journal: International Journal of Approximate Reasoning (Online ISSN: 1873-4731, Print ISSN: 0888-613X)

Editor-in-Chief: Prof. Thierry Denoeux

Publisher: Elsevier

Ranking: Impact Factor 3.2, Scimago: Q1 in sector "Applied Mathematics", Q2 in sectors "Artificial Intelligence", "Software", "Theoretical Computer Science"

### Associate Editor

Date: 1/1/2021 (until 31/12/2023, Editorial Board Member)

Journal: International Journal of Medical Informatics (Online ISSN:1872-8243, Print ISSN:1386-5056)

Editor-in-Chief: Prof. Dr. Heimar Marin

Publisher: Elsevier

Ranking: Impact Factor 4.9, Scimago: Q1 in sector "Health Informatics"

### Associate Editor

Date: 1/1/2024 - current

Journal: Soft Computing (Online ISSN: 1433-7479, Print ISSN: 1432-7643)

Editor-in-Chief: Profs. Antonio Di Nola and Raffaele Cerulli

Publisher: Springer Nature

Ranking: Impact Factor 4.1, Scimago: Q2 in sectors "Theoretical Computer Science" and "Software"

### Editor

Date: 6/10/2023 - current

Journal: BMC Medical Informatics and Decision Making (Online ISSN: 1472-6947)

Editor-in-Chief: Piero Lo Monaco

Publisher: BioMed Central Ltd

Ranking: Impact Factor: 3.5, Scimago: Q1 in "Health Policy", Q2 in sectors "Health Informatics" and "Computer Science Applications"

### Guest Editor

Date: 1/3/2024 - current

Journal: International Journal of Medical Informatics (Online ISSN: 1872-8243, Print ISSN: 1386-5056)

Special Issue: Applications of Machine Learning and Uncertainty Modeling for Real-World Medical Decision-Making

Publisher: Elsevier

Ranking: Impact Factor 4.9, Scimago: Q1 in sector "Health Informatics"

#### **Guest Editor**

Date: 1/01/2024 - 20/03/2025

Journal: International Journal of Applied Mathematics and Computer Science

Special Issue: Applications of incompleteness and uncertainty management methods

Publisher: De Gruyter

Ranking: Impact Factor 1.9, Scimago: Q2 in sectors "Computer Science "Miscellaneous" and "Applied Mathematics"

#### **Guest Editor**

Date: 17/11/2022 - 31/12/2023

Journal: Array

Special Issue: Weak and cautious learning: conceptual foundations and practical algorithms

Publisher: Elsevier

Ranking: Citescore: 5.6, Scimago: Q1 in sector "Computer Science (miscellaneous)"

#### **Proceedings Editor**

Title: Rough Sets, International Joint Conference, IJCRS 2023, Krakow, Poland, October 5-8, 2023, Proceedings. Doi: 10.1007/978-3-031-50959-9

Conference: International Joint Conference (IJCRS 2023), Krakow (Poland)

Collection: Lecture Notes in Computer Science

Volume: 14481

Publisher: Springer Nature

#### **Proceedings Editor**

Title: Machine Learning and Knowledge Extraction, 7th IFIP TC 5, TC 12, WG 8.4, WG 8.9, WG 12.9 International Cross-Domain Conference, CD-MAKE 2023, Benevento, Italy, August 29 - September 1, 2023, Proceedings. doi: 10.1007/978-3-031-40837-3

Conference: International Cross-Domain Conference (CD-MAKE 2023), Benevento (Italy)

Collection: Lecture Notes in Computer Science

Volume: 14065

Publisher: Springer Nature

#### **Reviewer (Journals)**

Artificial Intelligence Review, Applied Soft Computing, BMC Bioinformatics, BMC Decision Making and Medical Informatics, BMC Medical Research Methodology, Cognitive Computation, Expert Systems with Applications, IEEE Transactions on Fuzzy Systems, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Systems Man and Cybernetics (Systems), Information Sciences, International Journal of Approximate Reasoning, International Journal of Fuzzy Systems, International Journal of Human-Computer Systems, International Journal of Intelligent Systems, International Journal of Medical Informatics, Knowledge and Information Systems, Knowledge-based Systems, NPJ Digital Medicine, Scientific Reports,

### **Organization (including Program Committee membership) of Scientific Conferences or Workshops**

#### **Program Chair**

Conference: International Joint Conference on Rough Sets 2023 (IJCRS 2023)

Venue: AGH University of Science and Technology, Krakow, Polonia

Date: 5/10/2023 - 8/10/2023

#### **Program Chair**

Conference: International IFIP Cross Domain (CD) Conference for Machine Learning & Knowledge Extraction (MAKE) (CD-MAKE 2023)

Venue: Università del Sannio, Benevento, Italy  
Date: 29/8/2023 - 1/9/2023

#### **Workshop Organizer**

Workshop: 6th Workshop on Uncertainty in Machine Learning (WUML 2025)  
Venue: Università degli Studi di Milano-Bicocca, Milano, Italy  
Date: 5/2/2025 - 7/2/2025

#### **Workshop Organizer**

Workshop: Weakly Supervised and Cautious Learning (WSCL) Workshop, organized as a workshop at the 27th European Conference on Artificial Intelligence (ECAI 2024)  
Venue: Santiago de Compostela, Spain  
Date: 19/10/2024 - 20/10/2024

#### **Special Track Organizer**

Conference: 2nd World Conference on Explainable Artificial Intelligence (XAI 2024)  
Special Track: Calibrating Trust in XAI  
Venue: La Valletta, Malta  
Date: 17/7/2024 - 19/7/2024

#### **Special Session Organizer**

Conference: Information Processing and Management of Uncertainty in Knowledge-Based Systems (IPMU 2022)  
Special Session: Machine Learning for Partially Labeled Data  
Venue: Università degli Studi di Milano-Bicocca, Milano, Italy  
Date: 13/07/2022

#### **Special Session Organizer**

Conference: Information Processing and Management of Uncertainty in Knowledge-Based Systems (IPMU 2022)  
Special Session: Data Perspectivism in Ground Truthing and Artificial Intelligence  
Venue: Università degli Studi di Milano-Bicocca, Milano, Italy  
Date: 13/07/2022

#### **Tutorial Organizer**

Conference: 28th European Conference on Artificial Intelligence (ECAI 2025)  
Tutorial: Assessing Human Reliance on Artificial Intelligence in Hybrid Decision-Making  
Venue: University of Bologna, Bologna, Italy  
Date: 25/10/2025 - 26/10/2025

#### **Tutorial Organizer**

Conference: Second International Conference on Hybrid Human-Artificial Intelligence (HHAI 2023)  
Tutorial: How to Assess Human Reliance on Artificial Intelligence in Hybrid Decision-Making  
Venue: Ludwig-Maximilians-Universität München, Munich, Germany  
Date: 26/06/2023

#### **Program Committee Member**

IEEE International Conference on Data Mining (ICDM) 2024, 2025  
IEEE International Symposium on Computer-Based Medical Systems (CBMS) 2023, 2024, 2025  
International IFIP Cross Domain Conference for Machine Learning and Knowledge Extraction (CD-MAKE) 2021, 2022, 2023  
Conference on Computational Intelligence Methods for Bioinformatics and Biostatistics (CIBB) 2023, 2024, 2025  
European Conference on Artificial Intelligence (ECAI) 2023, 2024, 2025  
European Conference on Machine Learning and Data Mining (ECML-PKDD) 2023, 2025  
International Conference on Health Informatics (HealthInf) 2021, 2022, 2023, 2024, 2025  
International Joint Conference on Rough Sets (IJCRS) 2022, 2023, 2024, 2025  
International Conference on Information Processing and Management of Uncertainty in Knowledge-Based System (IPMU) 2022, 2024  
International Conference on Scalable Uncertainty Management (SUM) 2024  
Conference on Uncertainty in Artificial Intelligence (UAI) 2022, 2023, 2024, 2025

World Conference on Explainable Artificial Intelligence (XAI) 2023, 2024, 2025

**Session Chair**

Conference: 27th European Conference on Artificial Intelligence (ECAI 2024)

Session: Machine Learning

Date: 21/10/2024

**Session Chair**

Conference: 26th European Conference on Artificial Intelligence (ECAI 2023)

Session: Machine Learning

Date: 4/10/2023