

Andrea Campagner

CURRICULUM VITAE

PERSONAL INFORMATION

SURNAME	CAMPAGNER
NAME	ANDREA
BIRTH DATE	██████████
SCHOLAR PROFILE	HTTPS://SCHOLAR.GOOGLE.IT/CITATIONS?USER=HWVs0akAAAAJ

RESEARCH PROFILE

I'm currently a Post-doc researcher at the IRCCS Ospedale Galeazzi Sant'Ambrogio (Milano, Italy), working on the application of advanced Machine Learning and Artificial Intelligence techniques to clinical decision making. Previously, I obtained my PhD (with honors) at Università degli Studi di Milano-Bicocca, with a thesis on uncertainty management and quantification in Machine Learning.

My research interests lie at the intersection of three fields within Artificial Intelligence, namely: Machine Learning, Uncertainty Management, and Human-AI Interaction. The general goal of my research is to develop methods that offer provable guarantees about their performance, robustness and safety in complex real-world scenarios, while being interpretable and appropriable for users. I'm interested both in the theoretical (computational complexity and learning theory) and applied (in particular in regard to the medical domain) point of views.

In particular, my research focuses on the investigation of three problems: learning from uncertain data, a generalization of missing data, semi-supervised learning and learning from noisy data, where I study algorithms to efficiently learn accurate models despite having only imperfect and partial data; uncertainty quantification, where my goal has been to study method for quantifying the uncertainty associated with the predictions of Machine Learning models, emphasizing not only statistical validity but also utility and appropriateness for users; and human-AI interaction, where my goal has been to study the best ways to provide AI support in decision-making, with focus on understanding the impact of providing explanations and uncertainty quantification on human decisions.

TITLES

Habilitations

Abilitazione Scientifica Nazionale - II Fascia (Associate Professor) - Settore 01/B1 (Informatica)
15/07/2024 - 15/07/2035

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

Grade: 110L/110

Research Contracts

Post-doctoral Researcher

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

01/01/2024 - current

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

Affiliation: IRCCS Ospedale Galeazzi Sant'Ambrogio, Scientific Direction

Post-doctoral Researcher

Funding Project: Il supporto computazionale alle decisioni cliniche e del paziente: studi esplorativi e valutazioni empiriche

15/12/2022 - 31/12/2023

Funding body: Grant Ricerca Corrente, Italian Ministry of Health

Affiliation: IRCCS Ospedale Galeazzi Sant'Ambrogio, Scientific Direction

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

2 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

Decision Support Systems and Advanced Data Management

Lecturer ("Decision Theory" module)

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

1 CFU (12 hours)

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

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

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 more than 10 Master-level theses, for the MSc in Computer Science, MSc in Artificial Intelligence, MSc in Data Science, MA in Theory and Technology for Communication, Medical Degree of Università degli Studi di Milano-Bicocca. Supervised theses topics: machine learning, learning theory, data science and data visualization, health informatics.

Supervision of Bachelor-level Students

Supervision of more than 30 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 Activity in Recognized Research Groups

Researcher

IRCCS Ospedale Galeazzi Sant-Ambrogio (Milano, Italia), Scientific Direction
15/11/2022 - current

The institute is one of the major European research hospitals specializing in orthopedics and traumatology, and it is recognized by the Italian Ministry of Health as an Istituto di Ricovero e Cura a Carattere Scientifico (IRCCS). My activity in the research group focuses on the study and development of light-weight and interpretable artificial intelligence and data analysis methods for clinical decision making, with a specific focus on patient-reported outcomes' data as well as nutritional research. My research activity has led to the publication of several articles in impacted, international journals. My research activity has been tied to two research projects, funded by the Italian Ministry of Health, namely "Il supporto computazionale alle decisioni cliniche e del paziente: studi esplorativi e valutazioni empiriche" (15/12/2022 - current, funded by the Ricerca Corrente fund) and "I-COMET- Infrastruttura tecnologica condivisa per lo sviluppo di modelli predittivi dell'invecchiamento, basati sull'Intelligenza Artificiale" (01/01/2024 - current, funded by the Convenzione Progetto di Rete). 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).

Researcher

MUDI (Modeling Uncertainty Decisions and Interaction), Department of Computer Science, Systems and Communication, Università degli Studi di Milano-Bicocca
01/10/2018 - current (until 25/02/2023 PhD Student)

The research lab is composed by 1 full professor, 1 associate professor, 3 post-doc researcher (including myself) and 5 PhD students. The research activity of the lab lies at the intersection of machine learning, human-AI interaction and uncertainty representation and management. My activity within the group has led to the publication of over 80 articles (more than half of which as first or last author) at international, impacted journals or conferences. As member of the research group I have also been directly involved in the establishment of research collaborations with several Italian and international research institutes, including: Ludwig-Maximilians University (Munich, Germania), resp. Prof. Dr. Eyke Huellermeier; HEUDIASYC lab of the University of Technology of Compiègne (France), resp. Prof. Thierry Denoeux and Senior Researcher Sebastien Destercke; Fraunhofer Portugal AICOS of Lisbona and Department of Physics of the University NOVA of Lisbon (Portugal); University of Regina (Canada), resp. prof. Yiyu Yao; Human-Centered AI Lab of the University of Natural Resources and Life Sciences (Wien, Austria), resp. Prof. Andreas Holzinger; University of Warmia and Mazuria in Olsztyn (Poland), resp. prof. Piotr Artiemjew; Ospedale Policlinico di Milano, resp. prof. Beatrice Arosio; Comitato Scientifico della Società Nazionale di Chimica Clinica e Medicina di Laboratorio (SIBIOC), resp. Dott.ssa Anna Carobene; Ospedale Maggiore Policlinico, resp. Prof. Pasquale Capaccio. The lab has also recently been awarded a research grant, funded by the Bando PRIN 2022 PNRR of the Italian Ministry of University and Research, for the InXAid research project (Principal Investigator: Prof. Federico Cabitza) to which I directly collaborated to the writing of the proposal as well as for different Work Packages (WP1, focusing on uncertainty quantification, and WP4, focusing on validation activities).

Research Projects

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

01/01/2024 - current

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, 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'm leader of a research group that currently enrolls a junior researcher and a technician. The scientific aim of the research project is 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. The project has so far led to the publication of 2 journal articles.

InXAID - 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.

Participation in International Conferences and Workshops

Invited Speaker/Roundtable Participant

Venue: Diagnostica Avanzata: dal laboratorio all'intelligenza artificiale, organized by PerfeTTO (Italian Technology Transfer Office Network in Life Sciences)

Date: 21/11/2024

Invited Speaker (EurAI Best Dissertation Award)

Title: Robust Learning Methods for Imprecise Data and Cautious Inference

Venue: 27th European Conference on Artificial Intelligence (ECAI 2024), Santiago (Spain), CORE A

Date: 24/10/2024

Invited Speaker

Title: Esperienza del GdS SIBioC nello sviluppo e validazione di un modello multicentrico basato su parametri ematologici per lo screening della sepsi

Venue: 56° Congresso Nazionale SIBioC - Medicina di Laboratorio (SIBioC 2024), Bologna (Italy)

Date: 8/10/2024

Invited Speaker

Title: Credal Learning: Weakly Supervised Learning from Credal Sets

Venue: Workshop on Uncertainty in Machine Learning (WUML 2024), Munich (Germany)

Date: 20/02/2024

Invited Speaker

Title: From Human Centered to Interactionist Artificial Intelligence

Venue: Human-Centered AI workshop at NeurIPS 2021 (HCAI@NeurIPS 2021), CORE: A*

Date: 13/12/2021

Invited Speaker

Title: Decisions are not all equal. Introducing a utility metric based on the case-wise raters' perceptions

Venue: Realizing AI in Healthcare workshop at CHI 2021 (CHI 2021), CORE: A*

Date: 8/5/2021

Speaker

Title: On the Validity of Credal Classifiers

Venue: Weakly Supervised and Cautious Learning Workshop, 27th European Conference on Artificial

Intelligence (ECAI 2024), CORE A
Date: 20/10/2024

Speaker

Title: Credal Learning: Weakly Supervised Learning from Credal Sets
Venue: 26th European Conference on Artificial Intelligence (ECAI 2023), Krakow (Poland), CORE A
Date: 3/10/2024

Speaker

Title: AI Shall Have No Dominion: on How to Measure Technology Dominance in AI-supported Human Decision Making
Venue: ACM CHI Conference on Human Factors in Computing Systems (CHI 2023), Hamburg (Germany), CORE A*
Date: 25/04/2023

Speaker

Title: Toward a Perspectivist Turn in Ground Truthing for Predictive Computing
Venue: 37th AAAI Conference on Artificial Intelligence (AAAI 2023), Online, CORE: A*
Date: 10/02/2023

Speaker

Title: Aggregation Operators on Shadowed Sets Deriving from Conditional Events and Consensus Operators
Venue: International Joint Conference on Rough Sets (IJCRS 2023), Krakow (Poland), CORE C
Date: 7/10/2023

Speaker

Title: Let Me Think! Investigating the Effect of Explanations Feeding Doubts About the AI Advice
Venue: 6th International IFIP Cross Domain Conference for Machine Learning and Knowledge Extraction (CD-MAKE 2022), Benevento (Italy), CORE: C
Date: 1/09/2023

Speaker

Title: Scikit-Weak: A Python Library for Weakly Supervised Machine Learning
Venue: International Joint Conference on Rough Sets (IJCRS 2022), Online, CORE: C
Date: 14/11/2022

Speaker

Title: A Distributional Approach for Soft Clustering Comparison and Evaluation
Venue: 7th International Conference on Belief Functions (BELIEF 2022), Paris (France)
Date: 26/10/2022

Speaker

Title: Three-way Learnability: A Learning Theoretic Perspective on Three-way Decision
Venue: 17th Conference on Computer Science and Intelligent Systems (FedCSIS 2022), Sofia (Bulgaria), CORE: B
Date: 6/9/2022

Speaker

Title: Re-calibrating Machine Learning Models Using Confidence Interval Bounds
Venue: 19th International Conference on Modeling Decisions for Artificial Intelligence (MDAI 2022), Sant Cugat (Spain), CORE: B
Date: 1/9/2022

Speaker

Title: Color Shadows (Part I): Exploratory Usability Evaluation of Activation Maps in Radiological Machine Learning
Venue: 6th International IFIP Cross Domain Conference for Machine Learning and Knowledge Extraction (CD-MAKE 2022), Wien (Austria), CORE: C
Date: 24/8/2022

Speaker

Title: Rough-set Based Genetic Algorithms for Weakly Supervised Feature Selection

Venue: 19th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems(IPMU 2022), Milano (Italy), CORE: C
Date: 13/7/2022

Speaker

Title: Comparative Assessment of Two Data Visualizations to Communicate Medical Test Results Online
Venue: 17th Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISIGRAPP 2022), CORE: B
Date: 7/2/2022

Speaker

Title: Feature Selection and Disambiguation in Learning from Fuzzy Labels Using Rough Sets
Venue: International Joint Conference on Rough Sets (IJCRS 2021), CORE: C
Date: 21/9/2021

Speaker

Title: Weighted Utility: A Utility Metric Based on the Case-Wise Raters' Perceptions
Venue: 5th International IFIP Cross Domain Conference for Machine Learning and Knowledge Extraction (CD-MAKE 2021), CORE: C
Date: 20/8/2021

Speaker

Title: Learnability in "Learning from Fuzzy Labels"
Venue: IEEE International Conference on Fuzzy Systems 2021 (FUZZ-IEEE 2021), CORE: B
Date: 14/7/2021

Speaker

Title: Prediction of ICU admission for COVID-19 patients: a Machine Learning approach based on Complete Blood Count data
Venue: 34th International Symposium on Computer-Based Medical Systems (CMBS 2021)
Date: 7/6/2021

Speaker

Title: Assessing the impact of medical AI: a survey of physicians' perceptions
Venue: 5th International Conference on Medical and Health Informatics (ICMHI 2021)
Date: 15/5/2021

Speaker

Title: Back to the Feature: A Neural-Symbolic Perspective on Explainable AI
Venue: 4th International IFIP Cross Domain Conference for Machine Learning and Knowledge Extraction (CD-MAKE 2020), CORE: C
Date: 18/8/2020

Speaker

Title: Approximate Reaction Systems Based on Rough Set Theory
Venue: International Joint Conference on Rough Sets (IJCRS 2020), CORE: C
Date: 30/6/2020

Speaker

Title: Three-Way Decision for Handling Uncertainty in Machine Learning: A Narrative Review
Venue: International Joint Conference on Rough Sets (IJCRS 2020), CORE: C
Date: 30/6/2020

Speaker

Title: H-Accuracy, an Alternative Metric to Assess Classification Models in Medicine
Venue: Medical Informatics in Europe (MIE 2020)
Date: 29/4/2020

Speaker

Title: A Formal Learning Theory for Three-Way Clustering
Venue: 14th International Conference on Scalable Uncertainty Management (SUM 2020)

Date: 23/2/2020

Speaker

Title: Programmed Inefficiencies in DSS-Supported Human Decision Making

Venue: 16th International Conference on Modeling Decisions in Artificial Intelligence (MDAI 2019), Milano (Italy), CORE: B

Date: 6/9/2019

Speaker

Title: Three-Way Classification: Ambiguity and Abstention in Machine Learning

Venue: International Joint Conference on Rough Sets (IJCRS 2019), Debrecen (Hungary), CORE: C

Date: 19/6/2019

Speaker

Title: Exploring Medical Data Classification with Three-Way Decision Trees

Venue: 12th International Conference on Health Informatics (HEALTHINF 2019), Prague (Czech Republic)

Date: 23/2/2019

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

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, 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.combiomed.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

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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

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Editorial Activity

Area Editor

Date: 1/11/2024

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 - current
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, 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 Intelligent Systems, Knowledge and Information Systems, BMC Bioinformatics, BMC Decision Making and Medical Informatics, BMC Medical Research Methodology, International Journal of Medical Informatics, NPJ Digital Medicine, Scientific Reports, International Journal of Human-Computer Systems

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: 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

IEEE International Symposium on Computer-Based Medical Systems (CBMS) 2023, 2024

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

European Conference on Artificial Intelligence (ECAI) 2023, 2024

European Conference on Machine Learning and Data Mining (ECML-PKDD) 2023

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

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

Data

04/12/2024

Luogo

Milano, Italy

A handwritten signature in black ink, appearing to read "Andrea Longo". The signature is written in a cursive, flowing style.