

CODAI 2024

**Workshop on Countering Disinformation with  
Artificial Intelligence (CODAI 2024)**

*Proceedings of the Workshop co-located with the 27th European  
Conference on Artificial Intelligence*

**October 20, 2024**

## Preface

This volume contains papers from the 1st Workshop on Countering Disinformation with Artificial Intelligence (CODAI), held at the European Conference on Artificial Intelligence (ECAI) 2024.

Social media platforms which have been designed primarily to allow users to create and share content with others, have become integral parts of modern communication, enabling people to connect with friends, family as well as for broadcasting information to a wider audience. On one side these platforms provide an opportunity to facilitate discussions in an open and free environment. On the flip side, new societal issues have started emerging on these platforms. Among all the issues, the topic of misinformation has been prevalent on these platforms. The term misinformation is an umbrella term which encompasses various entities such as fake news, hoaxes, rumors to name a few. While misinformation refers to non-intentional spread of non-authentic information, the term disinformation points to spreading of a piece of inauthentic information with certain malign intentions.

Initially, researchers have mainly focused on identifying and characterizing misinformation using text based techniques through traditional and advanced NLP techniques. However, with the advancement of techniques and availability of various AI tools, the (mis)information has started appearing in the form of multimodality. For example, a piece of image with incorrect text embedded on it or a morphed video with audio. In addition, the topic of misinformation has impacted individuals and communities from various domains such as medical, political, entertainment, business, etc. This calls for combining forces from different domains. In other words, to counter misinformation computer scientists need to work with domain specialists. To understand the intention a psychologist's inputs can also be vital to understand the reasons for the spreading of misinformation. To summarize, a holistic view is needed to counter the menace of misinformation spread on online social media platforms.

The goal of this workshop is to bring together researchers interested in various domains to not only present their works but also to provide an ecosystem for discussing ideas that facilitate countering the spread of misinformation. We received a total of 17 submissions to the main workshop, of which seven were accepted as oral presentations. Finally, the workshop will feature two distinguished keynote speakers: Paolo Rosso, Universitat Politècnica de València, and David Camacho, Universidad Politècnica de Madrid, Spain.

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## Keynote Talk

# Countering disinformation with AI: discriminating conspiracy theories from critical thinking

Paolo Rosso

Universitat Politècnica de València

**Abstract:** The rise of social media has offered a fast and easy way for the propagation of disinformation and conspiracy theories. Despite the research attention that has received, disinformation detection remains an open problem and users keep sharing texts that contain false statements. In this keynote I will briefly describe how to go beyond textual information to detect disinformation, taking into account also affective and visual information because providing important insights on how disinformation spreaders aim at triggering certain emotions in the readers. I will also describe how psycholinguistic patterns and users' personality traits may play an important role in discriminating disinformation spreaders from fact checkers. Moreover, I will comment on some studies on the propagation of conspiracy theories. In the framework of the PAN Lab at CLEF, we are organising a challenge on oppositional thinking analysis to discriminate between conspiracy narratives and critical thinking. This distinction between critical and conspiracist narratives is vital because considering a message as conspiratorial when it is only oppositional to mainstream views could start a psychosocial process that drives into the arms of the conspiracy communities those who were simply critical about controversial topics such as vaccination or climate change. Most of the work was done in the framework of IBERIFIER, the Iberian media research and fact-checking hub on disinformation funded by the European Digital Media Observatory, and the research projects XAI-DisInfodemics (eXplainable AI for disinformation and conspiracy detection during infodemics), and FAKEnHATE-PdC (FAKE news and HATE speech).

**Bio:** Paolo Rosso is Full Professor of Computer Science at the Universitat Politècnica de València, Spain. His current research interests fall mainly in the area of detection of harmful information in social media, both fake news and hate speech. He is the principal investigator of two related projects: XAI-DisInfodemics on eXplainable AI for disinformation and conspiracy detection during infodemics (PLEC2021-007681), and FAKEnHATE-PdC on FAKE news and HATE speech (PDC2022-133118-I00), both funded by the Spanish Ministry of Science, Innovation and Universities, and by European Union NextGenerationEU/PRTR. He collaborated with the Spanish National Security Department and with the Science and Tech.

## Keynote Talk

# Rethinking the problem of disinformation and Artificial Intelligence: boundaries, threats, and trends

David Camacho

Universidad Politécnica de Madrid

**Abstract:** Disinformation (and more generally misinformation) is spreading everywhere online, causing problems for individuals, societies, and countries. This unchecked dissemination of falsehoods, has nurtured an environment ripe for the proliferation of rumors, propaganda, and hoaxes, exacting a toll on the economic, political, and public health realms, among many other aspects in our daily lives. Confronting this multifaceted adversary demands a united front, drawing upon the collective wisdom and resources of diverse stakeholders including individuals, media entities, governmental bodies, technology firms, and scholars. This keynote endeavours to illuminate the intricate contours of this challenge, delving into some popular Computational techniques such as Machine Learning and Graph Computing as a new set of weapons in the battle against misinformation. Focused primarily on three domains, Natural Language Processing (NLP) and Multimodal Deep Learning (MDL) and Social Network Analysis (SNA), our discourse aims to unveil the potential of these techniques in discerning truth from falsehood. Within the realm of NLP/MDL and SNA, particular attention will be devoted to the factor-check architecture, a novel framework that through the use of ensembles and deep learning techniques based in Transformer technology, enables the identification and tracking of misleading content across the vast expanse of online social networks.

**Bio:** David Camacho is Full Professor at Computer Systems Engineering Department of Universidad Politécnica de Madrid (UPM), he is the head of the Applied Intelligence and Data Analysis research group (AIDA: <https://aida.etsisi.uam.es>), the Director of the PhD program in Computer Science and Technologies of Smart Cities, and the Director of the Master program in Machine Learning and Big Data at UPM. He has published more than 300 journals, books, and conference papers (google scholar). His research interests include Machine Learning (Clustering/Deep Learning), Computational Intelligence (Evolutionary Computation, Swarm Intelligence), Social Network Analysis, Fake News and Disinformation Analysis. He has participated/led more than 60 AI-based R&D projects (National and International: H2020, MCSA ITNETN, DG Justice, ISFP, NRF Korea), applied to real-world problems in areas as aeronautics, aerospace engineering, cybercrime/cyber intelligence, social networks applications, disinformation countering, or video games among others. He serves as Editor in Chief of Expert Systems from 2023 and sits on the Editorial Board of several journals including Information Fusion, Human-centric Computing and Information Sciences (HCIS), and Cognitive Computation, IEEE Transactions on Emerging Topics in Computational Intelligence (IEEE TETCI), among others. Contact at: David.Camacho@upm.es.

# Workshop Program

**9:15 - 9:30** Welcome and opening remarks

**9:30 - 10:30** **Invited talk by David Camacho**

**10:30 - 11:00** Coffee break

**11:00 - 12:30** **Paper presentations**

*Analysis of Climate Change Misleading Information in TikTok*

Clara Baltasar, Sergio D'Antonio Maceiras, Alejandro Martin and David Camacho

*Diachronic Political Content Analysis: A Comparative Study of Topics and Sentiments in Echo Chambers and Beyond*

Michele Joshua Maggini, Virginia Morini, Davide Bassi and Giulio Rossetti

*Factoring in context for the automatic detection of misrepresentation*

Bruna Paz Schmid, Annette Hautli-Janisz and Steve Oswald

*Are Misinformation Propagation Models Holistic Enough? Identifying Gaps and Needs*

Raquel Rodriguez-García, Álvaro Rodrigo and Roberto Centeno

**12:30 - 14:00** Lunch break

**14:00 - 15:30** **Paper presentations**

*Detecting fake news using Twitter social information*

Jesus Maria Fraile Hernandez, Alvaro Rodrigo and Roberto Centeno

*On the Categorization of Corporate Multimodal Disinformation with Large Language Models*

Ana-Maria Bucur, Sónia Gonçalves and Paolo Rosso

*Automated Fact-checking based on Large Language Models:*

*An application for the press*

Bogdan Andrei Baltes, Yudith Cardinale and Benjamin Arroquia Cuadros

**15:30 - 16:00** Coffee break

**16:00 - 17:00** **Invited talk by Paolo Rosso**

**17:00 - 17:10** Closing remarks

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