

# Preface

The Workshop “From Objects to Agents” (WOA) is the reference event for Italian researchers active in the Agents and Multi-Agent Systems research domain. Since its very first edition in 2000, located in Parma (Italy), WOA was conceived as a meeting occasion for researchers and practitioners from the working group on MAS of AIxIA and from the TABOO association (Advanced Technologies Based on Concepts from Object-Orientation). After that, WOA was held on a yearly basis in many different Italian locations, from north to south, gaining a conspicuous success and succeeding in gathering researchers and practitioners from various research fields, thanks to its format.

Despite stemming from an Italian initiative, WOA is an international workshop where presenters and participants exchange opinions and discuss on-going works in a friendly yet rigorous setting. Furthermore, since 2004, WOA includes a one-day mini-school, where experienced scientists and professionals can introduce younger researchers as well as Ph.D. and undergraduate students to hot topics in the fields of AI, MAS, and Programming Languages.

The 23<sup>rd</sup> edition of the workshop has been held on September 1–3, 2022 in Genova. During these three days, 21 speakers joined the workshop and the mini-school, almost 30 attendees (out of which, 14 students) joined in presence, and 20 joined remotely. The travel and accommodation of four students was partly supported by AIxIA.

This edition was structured in two mini-school sessions, two keynote speeches, and in seven technical sessions. The seven technical sessions hosted the presentation of 17 papers collected in this virtual volume published by CEUR.

The topics discussed in the papers covered some of the hottest topics laying under the umbrella of “Emotional and Believable Human-Agent Interaction”, as requested by the call for papers. The choice of this theme was deliberate.

In 1950, in the attempt of formulating the question: “Does a machine think?”, Alan Turing devised what in future would have been called The Turing Test, even though for him The Imitation Game would suffice. This test was meant to test a machine’s ability to exhibit intelligent behavior equivalent to, or indistinguishable from, that of a human. Now, 72 years later, we still find ourselves fascinated by such question, that became more important than ever, and that integrated new dimensions besides “being intelligent”: interactions between humans and machines are now expected to be believable and to take emotions into account.

When talking about Agents, we cannot indeed avoid to talk about believable interactions; be them amongst other agents, or even human beings. By interacting, agents establish a means to enhance the chances of succeeding in their goals. In the modern age, we are used to have technology around us, but how much technology is used to have us around? How much the agents are capable of exploiting such interactions? How much such interactions are believable and “emotionally-aware” from the human’s viewpoint?

Naturally, the ability of interacting with human beings is not a sole problem of MAS, but a more general issue for the entire AI world. This becomes of paramount importance especially when the AI component has to instill trust in the human user. Such aspect finds a strong connection with the macro area of Explainability in AI (XAI); since the notion of being Believable and Emotional is not orthogonal to the notion of being Explainable to humans.

As far as the mini-school is concerned, two sessions were organised, hosting talks from experts in the fields of Formal Verification and MAS. In particular, in the first session, Vadim Malvone presented the basis on formal verification of MAS. The talk introduced Alternating-time Temporal Logic (ATL) and its verification in the context of MAS. In the second session, Roberto Micalizio introduced accountability and explained its use from a software engineering perspective. More precisely, after an initial discussion about accountability in abstract terms, Micalizio presented how it could be the means for the design of robust distributed systems.

Two keynote speakers were invited.

The first invited speech was given by Antonio Camurri, who discussed multimodal systems supporting the active experience of audiovisual cultural content, for cultural welfare and non-verbal affective applications. In particular, Camurri presented results of projects at Casa Paganini-InfoMus in this area, and in particular DanzArTe, a treatment protocol and interactive system designed for older people at risk of fragility, grounded on the active experience and real-time processing of audiovisual cultural content.

The second invited speech (the “Fabio Bellifemine” keynote speech) was given by Robert Kowalski, who discussed how Logical English can be used as a Computer Language for Human-Machine communication. In particular, Kowalski presented Logical English and illustrated its use for representing and executing legal rules and regulations, including the use of meta- (or higher-order) predicates to represent propositional attitudes, such as obligations, permissions, and notifications.

The 17 papers collected in this issue were organised into seven thematic sessions. The final versions also include the outcomes of the discussions that followed the presentations at the workshop. The authors’ contributions cover extremely relevant research areas that include (i) Human-agent interaction and emotions, (ii) Symbolic knowledge injection and extraction, (iii) Trust and autonomy in agent interactions, (iv) Agent-Based Modeling and Simulation, (v) Emotionality and rationality, (vi) Applications and projects, (vii) Risk mitigation, robustness and security.

In the end, the Organising Scientific Committee gratefully thanks all those who, with their work and their enthusiasm, have contributed to the success of this edition of WOA: the members of the Program Committee, the Department of Informatics, Bioengineering, Robotics and Systems Engineering (DIBRIS) of the University of Genova, AIxIA, the University of Genova, Genova Municipality, Casa Paganini’s staff that opened the beautiful Casa Paganini venue for hosting the event, the local organiser Andrea Gatti, the speakers of the workshop sessions, the mini-school lecturers, the sponsors, and all collaborators who participated in the organisation. Overall, they would like to thank the lively, creative and sometimes volcanic community that has been regularly meeting for 23 years at the workshop.

Angelo Ferrando and Viviana Mascardi

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