

# CoPDA2022 - Cultures of Participation in the Digital Age: AI for Humans or Humans for AI?

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## ABSTRACT

The sixth edition of the CoPDA workshop is dedicated to discussing the current challenges and opportunities with respect to Artificial Intelligence (AI) by contrasting it with the objectives pursued by Human-Centered Design (HCD). The workshop aims to establish a forum to explore our basic assumption (and to provide at least partial evidence) that the most successful AI systems out there today are dependent on teams of humans, just as humans depend on these systems to gain access to information, provide insights and perform tasks beyond their own capabilities.

## CCS CONCEPTS

• **Human-centered computing** → *HCI theory, concepts and models*; • **Computing methodologies** → *Philosophical/theoretical foundations of artificial intelligence*.

## KEYWORDS

Cultures of Participation, Artificial Intelligence, Intelligence Augmentation, Human-Centered Design, Design Trade-Offs, Quality of Life

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## 1 INTRODUCTION

Funded in 2013, Cultures of Participation in the Digital Age (CoPDA) is a series of workshops that considers users' needs and expectations

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in their daily interaction with software applications. The previous five editions of CoPDA addressed a variety of themes:

- 2013: Empowering End Users to Improve their Quality of Life [7][8]
- 2014: Social Computing for Working, Learning, and Living [6]
- 2015: Coping with Information, Participation, and Collaboration Overload [5]
- 2016: From “Have to” to “Want to” Participate [3]
- 2018: Design Trade-offs for an Inclusive Society [4][11]

All workshops adopted a Human-Centered Design (HCD) perspective for analyzing opportunities and issues based on interactive systems aimed at empowering end users in shaping their information, tools, and daily activities. HCD should not only be grounded in understanding new media and technologies in terms of productivity, efficiency, reliability, and increased revenue, but it must explore innovative socio-technical environments contributing to human creativity, gratification, enjoyment, knowledge, and quality of life. This represents a wicked problem [20] with no “correct” solutions or “right” answers. A wicked problem is addressed with methods that goes beyond problems solving and include argumentation. Rittel, who coined the term, applied it in planning and design. He said there are no stopping rules in planning because each wicked problem can be considered to be a symptom of another problem [20]. He developed an argumentative design method by which wicked problems are solved arguing for and against various positions on issues to reveal essentially a social process aiming at creative solutions [16]. Recognizing that Artificial Intelligence (AI) is today one of the trending topic in large parts of the world, this CoPDA edition aims to reflect on the role of HCD in the AI age. Mainly, we are not interested in discussing the design of user interfaces of systems with AI features; principles for human-AI interaction have been discussed in the literature for several years [14][18], and recently a unified set of design guidelines for human-AI interaction has been synthesized and validated on a variety of systems [1]. Rather, grounded in research activities from a broad spectrum of different academic disciplines, from computer science to social science, this CoPDA workshop critically analyzes the current hype about AI by contrasting it with the objectives pursued by HCD [17], in order to investigate the impact on individuals, social groups, and society as a whole.

Recalling the 2018th edition of the workshop [4], where we discussed the role of trade-offs as the most basic characteristics of design, we aim to explore design trade-offs to broaden our horizons and make us aware of a wider spectrum of design options in the AI age. Design trade-offs are universal and suggest that there are “no decontextualized sweet spots” [10]. In contrast to design guidelines, they widen rather than narrow design spaces by (1) avoiding simple solutions to complex problems and (2) by identifying and exploring interesting new approaches with the objective to synthesize the strengths and reduce the weaknesses of the binary choices defining the trade-offs.

The workshop would like to explore the relationship between AI (aimed at replacing human beings) and Intelligence Augmentation (IA), focused on empowering human beings in their daily life and work [13]. Balancing between these two perspectives means changing the research paradigm from traditional human-computer interaction, to designing for collaboration between humans and computers, exploiting new approaches such as meta-design [12] and end-user development [2]. This will foster creativity, meaningful work, intersubjectivity, and learning, and eventually improve the quality of life of individuals [11]. A variety of issues and ethical problems need to be addressed in this new age [9][15][19][21] – e.g., privacy intrusions, massive unemployment, knowledge and competence loss, lack of control, autonomous weapons, etc. The workshop organizers encourage participants to consider these aspects in their contributions.

## 2 WORKSHOP AIMS

The workshop aims to discuss the importance of HCD in the AI Age by considering several topics including (but not limited to):

- Cooperative problem-solving systems
- Collaborative learning
- Cultures of participation
- Meaningful human control
- Adaptive, adaptable, and context-aware systems
- Distributed cognition
- Tacit knowledge and meaning making
- Multi-dimensional aspects of learning
- Big data and privacy
- Learning analytics
- Human-machine teaming systems
- Explainability and accountability of AI-based decisions
- Evaluation of AI-based systems
- End-User Development for AI-based systems

The workshop would like to explore specific questions centered on the relationship between AI and HCD, such as:

Can we identify success stories and inspirational prototypes of systems where humans and AI components have created unique opportunities that neither one could achieve on their own?

Can we identify failures of AI systems that we can learn from?

How can we orient future development when considering the differences and complementarity between adaptive systems (focus on AI) and adaptable systems (focus on HCD)?

Do the concepts of co-evolution and appropriation of human-machine teaming/cooperative systems change in the AI age?

How can End-User Development methods and techniques be used in AI-based systems to actively involve all stakeholders in design and development process?

How do we measure the overall benefits of AI decision-making support?

What are examples of collective HCD environments?

Do insights derived from AI systems (e.g., from Big Data analysis and Learning Analytics) constitute unique contributions that humans are not able to contribute on their own?

Will the current understanding of advanced technologies help us better understand who we are as human beings and what are our unique abilities?

## 3 WORKSHOP ORGANIZATION

The workshop Website <https://homes.di.unimi.it/cslab/copda2022/> is used as repository of the workshop material (program, submissions, outcomes, etc.); it will be maintained on-line after the workshop, accessible to everyone (both participants and not).

Researchers and practitioners from various backgrounds and communities have been invited to discuss the interplay between AI and HCD in terms of trade-offs that must be considered to design decision support systems able to explain their internal logic (e.g., algorithms) to the users, or in general AI-based software solutions that allows users to gain insight into the system’s models and reasoning, with the purpose of improving user’s performance and awareness. Researchers and practitioners have been also encouraged to reflect, according to a new IA perspective, on key concepts traditionally considered in HCD, such as cognition, collaboration, appropriation, co-evolution, learning, and evaluation. Potential participants have been required to submit a 5-page position paper addressing the topics and goals of the workshop. Following the successful examples of previous CoPDA workshops, all contributions have been collected and published open access in CEUR-WS proceedings. In the spirit of a “flipped classroom” approach, the organizers have required participants to access the proceedings before the workshop, to engage the participants in pre-workshop interactions and stimulate discussion during the workshop.

The workshop day is structured as follows: 1) a brief round of quick presentations by each participant takes place; 2) the participants give a 10-minute presentation of their papers, followed by 10 minutes for questions and answers; 3) a plenary discussion about the challenges emerged in pre-workshop activities, as well as in the presentations, takes place; 4) concluding remarks with proposals for future collaboration close the workshop.

## 4 ORGANIZERS’ BIOS

**Barbara Rita Barricelli** is Assistant Professor at the Department of Information Engineering of Università degli Studi di Brescia (Italy). Her research interests are Human-Computer Interaction, Human Work Interaction Design, Socio-technical Design, End-User Development, Usability and UX. She has been involved in several International and Italian projects in collaboration with universities, research institutes, and private companies. She is Chair of IFIP TC13.6 Working Group on Human Work Interaction Design.

**Gerhard Fischer** is a Professor Adjunct and Professor Emeritus of Computer Science, a Fellow of the Institute of Cognitive Science,

and the Director of the Center for Lifelong Learning and Design (L3D) at the University of Colorado at Boulder. He is a member of the Computer Human Interaction Academy (CHI; 2007), and a Fellow of the Association for Computing Machinery (ACM; 2009). His research has focused on new conceptual frameworks and media for learning, working, and collaborating, human-centered computing, and design. His recent work is centered on quality of life in the digital age, social creativity, meta-design, cultures of participation, design trade-offs, and rich landscapes for learning.

**Daniela Fogli** is Professor at the Department of Information Engineering, University of Brescia, Italy. Her research interests include methods for designing complex interactive systems, meta-design, end-user development, web usability and accessibility, decision support systems. She has performed her research activity in collaboration with several scholars of different universities and research centers. She is serving as senior associate editor for the Decision Support Systems journal and she is chair of the steering committee of the International Symposium of End-User Development (IS-EUD).

**Anders Mørch** is Professor at Department of Education (IPED), University of Oslo, Norway. He received his PhD in informatics from the University of Oslo and an M.S. in computer science from the University of Colorado, Boulder. He developed Intelligent Tutoring Systems at NYNEX, New York. His research interests are in how tools and artefacts help people learn together (distance education, computer-based scaffolding, end-user tailoring); interfaces supporting learning (critiquing systems; pedagogical agents; learning analytics); domain-oriented design environments for classroom use (maker spaces, virtual worlds); new models of design-based collaborative learning.

**Antonio Piccinno** is Associate Professor at the Computer Science Department of University of Bari “Aldo Moro”. He is member of the Interaction, Visualization, Usability & UX (IVU) Lab. His research interests are in Human-Computer Interaction, particularly on End-User Development, Visual Interactive Systems, Theory of Visual Languages, Adaptive Interfaces, Component-Based Software Development, Multi-modal and Multimedia Interaction. He served as program co-chair of IS-EUD 2011, doctoral consortium co-chair of ACM CHIItaly 2015 and IS-EUD 2017, poster and demo papers co-chair of ACM AVI 2016. He is Guest Editor of the Special Issue on Semiotics, Human-Computer Interaction and End-User Development of the Journal of Visual Languages and Computing.

**Stefano Valtolina** is Associate Professor at the Computer Science Department of Università degli Studi di Milano. He obtained his PhD in ‘Informatics’ from Università degli Studi di Milano and an MSc in Computer Science from the same university. His research interests include: Human-Computer Interaction (HCI), Creative Design, as well as studies in semantic, social and cultural aspects of information technologies with an emphasis on the application of this knowledge to interaction design. His research activity is directed toward the study of aspects of Human Computer Interaction and Database Management investigating methods, interactive systems, and tools for Knowledge Management and Fruition.

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