

[ecap10](#)

8th European Conference on Computing and Philosophy



goes [blue](#) and comes to Munich.

Description of Tracks

Introduction

The conference is interdisciplinary: we invite papers from philosophy, computer science, robotics, engineering sciences, social sciences and related disciplines. Computing and thinking are the two sides of the same coin: biocomputing, AI, logic, cognition, ontology, knowledge systems, simulations, robotics, affective computing, epistemology, infoethics, roboethics, history among others, are expressions of the conceptual crossroads between researchers all around the world. [ECAP10](#) will be devoted to the foundations and limits of man-machine interaction. Our thoughts and actions, our perception, imagination, and experience depend more and more on informational, computational, and robotic systems with increasing complexity and autonomy. What are their epistemic, ethical, and societal challenges for the future of mankind? [ECAP10](#) will promote scholarly dialogues on all aspects of this computational & informational turn of society and the use of computers and robots in the service of philosophy.

Research Areas

We call for papers that cover topics pertaining to computing and philosophy from the following list (but not restricted to that list):

- Information and Knowledge Processing (Distributed Processing, Emergent Properties, Formal Ontology, Network Structures, etc)
- Philosophy of Computer Science
- Robotics, AI, and Ambient Intelligence
- Human-Machine Interaction and Explanation Capabilities
- Philosophy of Information Technology
- Neurocomputing and the Problem of Consciousness
- Computational Linguistics
- Computer-based Learning and Teaching Strategies and Resources
- The Impact of Distance Learning on the Teaching of Philosophy and Computing
- IT, Cultural Diversity, and Technoscience Studies
- Information and Computing Ethics: Roboethics
- Biocomputing, Artificial Life, Systems Biology
- Electronic Art
- Complexity and Emergency
- Imaging and Knowledge
- New Models of Logic Software
- Models & Simulations Epistemology
- Synthetic emotions
- Computer & Gender Studies

TRACK I

THE PHILOSOPHY OF COMPUTER SCIENCE

The Philosophy of Computer Science (**PCS**) is concerned with philosophical issues that arise from reflection upon the nature and practice of the academic discipline of Computer Science. Below we indicate a few of the central questions.

- I. How is a programming language determined? What role does a semantic definition play? Does it have to be a formal abstract specification?
- II. What sense is to be made of the notion that a programming language has an ontology? What is the role of such an ontology? How is it linked to the type structure of the language?
- III. What does it mean to say that a program is correct? What role do specifications play in correctness? How does the nature and use of theorem checkers and verifiers inform the debate? What are formal methods? What is the difference between a formal method and informal one?
- IV. Is there a distinctive form of reasoning that might be called *computational reasoning*? How, if at all, does it differ from mathematical reasoning?
- V. What kinds of things are digital objects?
- VI. What is abstraction in computer science? How is it related to abstraction in mathematics?
- VII. Does the Church-Turing thesis apply to physical machines? Does it make sense to say that the universe computes?

Among others, papers that address issues that concern the methodology of the discipline, the status and nature of its claims to knowledge, the nature of its artifacts, the nature and form of computational reasoning and the philosophical basis of computational modeling are welcome.

Information about PCS: <http://plato.stanford.edu/entries/computer-science/>

Chair: [Raymond Turner](#) (School of Computer Science and Electronic Engineering, University of Essex)

Chair: [Rainhard Z. Benge](#) (Philosophy of Science, Technology, and Engineering Department, TU München)

TRACK II

Philosophy of Information and Cognition

Whether we are talking about information or knowledge finally we need a medium to close the loop. This track deals with the following questions:

INFORMATION

- data, information and knowledge (including semantic information and formal epistemology)
- logic and information
- competing concepts of information (including unified concepts and criticisms of unified concepts)
- history of the concept of information

METHODOLOGY AND APPLICATIONS

- critical investigation of the methodology of PI (including problems regarding the scope and specificity of the philosophy of information)
- informational perspectives on language, mind, and cognition (including AI-related issues and the symbol grounding problem)
- use of 'information' in the philosophy of science (including causality, problem solving and model-based reasoning)

REPRESENTATION AND ORGANISATION (excluding Ontologies)

- the representation of information (including non-linguistic information and semiotics)
- the organization of information (including library and information sciences, information on the web, hypertext, tagging and folksonomies)

INFORMATION IN COGNITION AND NEUROSCIENCE

Good old-fashioned, classical AI was naturally and straightforwardly compatible with an information-theoretic view of cognition as serial information processing based on rules and algorithms. Connectionism in part already undermined this view by emphasizing the importance of parallel and distributed processing. The more recent paradigms in cognitive science and neuroscience under the headings of dynamic systems theory, embodiment and situated cognition call for an even stronger tension. Can, must or should cognition still exclusively be understood as information theoretic processing? And if so, how can the more recent paradigms of dynamics, embodiment and situatedness be given an information-theoretic shape and interpretation? And if not, where does the information-theoretic view fail? The track is devoted to all aspects of tackling these questions. Ultimately, these questions are deeply connected to the program of developing philosophical accounts of mental content and mental representations. They also relate to the notorious symbol grounding problem. Can the nature of mental representations be spelled out in terms of information? How are mental representations individuated? How is their proposed representational power connected, if at all, to their information processing capacities?

Finally, since the above mentioned questions relate more to ontological issues, one might also wonder whether our epistemic grasp on the nature of cognition hinges on our tools and methods to analyze and scrutinize cognition. Therefore, philosophical prospects connected with the application of information-theoretic tools and methods in the cognitive sciences and neurosciences should also be discussed.

List of topics:

- Information and connectionism
- Information and dynamicism
- Information and embodied cognition
- Information and situated cognition
- Information and extended cognition
- Information and (mental) content
- Information and mental representation
- Information-theoretic tools and methods in the cognitive sciences and neurosciences the nature of representation.

Chair: [Luciano Floridi](#) (Chair of Philosophy of Information and UNESCO Chair in Information and Computer Ethics, University of Hertfordshire, UK)

Chair: [Holger Lyre](#) (Lehrstuhl für Theoretische Philosophie/Philosophie des Geistes, Universität Magdeburg)

TRACK III

Robotics, AI and Cognitive Systems

Cognitive capabilities such as perception, reasoning, learning, and planning turn technical systems into systems that "know what they are doing". Starting from the human brain this track investigates cognition for technical and general cognitive systems. In line with the general E-CAP conference theme - computing and philosophy - this track is open to contributions from all disciplines, but has a particular focus on robotics, artificial intelligence, ambient intelligence and especially on cognitive ((semi-)autonomous) systems.

Possible topics include (but are by no means limited to):

- The role of artificial intelligence in ambient intelligence
- The role of ambient intelligence in robotics
- Semantics and knowledge representation for embodied agents
- Phenomenology, tacit and implicit knowledge
- Individualization of knowledge in ambient intelligence and robotics
- Human interactions with robots
- Explanation generation and ambient intelligence
- Applications of ambient intelligence
- Capabilities vs. abilities

Epistemology and ambient intelligence / robotics

Chair: [Jean Sallantin](#) (Directeur des Recherche au Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier (LIRMM))

Chair: [Michael Beetz](#) (Chair of Computer Science, Head of IAS Group, TU München)

TRACK IV

Computational Neuroscience of Emotions and Consciousness

Computational neuroscience tries to obtain a theoretical understanding of brain structures and biological neural networks by describing their functionality in computational terms. Recently, this approach has also been applied to such phenomena as emotions and consciousness, which have also become a focus of research in cognitive neuroscience. This leads to the question about the possible functionality or the evolutionary advantage of emotions and consciousness (assuming that they have evolved, i.e. that simple organisms, for example bacteria, don't possess emotions and consciousness). This track invites papers on these topics, i.e. computational models for emotions or for consciousness, preferably closely related to neuroscientific research (neuronal mechanisms, brain areas, evolutionary perspective).

Chair: [Günther Palm](#) (Institut für Neuroinformatik, Universität Ulm)

Chair: [Christoph von der Malsburg](#) (Institut für Neuroinformatik, Universität Bochum, Frankfurt Institute for Advanced Study FIAS)

TRACK V

Computational Approaches to Thoughts and Action

This track encompasses the analysis of the interconnectedness of thoughts and actions from a computational as well as from the philosophical point of view. Philosophical criticism forced a broader understanding how thoughts and actions work in a synthesis. Developments towards the “embodied mind” led to a variety of new concepts that pay tribute to interconnected mind and action.

Welcome are contributions which focus on the philosophy of mind, ontology and those which stress the interconnection of thoughts and actions in any kind, for example:

Philosophical approaches:

- Philosophy of Mind
- Philosophy of Action
- Mind-Body-Problem
- Embodiment - Disembodiment
- Interconnectedness Knowing and Acting
- Implicit and explicit, propositional and practical knowing

Methodological approaches:

- Ontologies
- Ontologies of actions
- Logic as action
- Action types and Action schemes

Representational approaches

- Social Computing
- Physical Computing
- Embodied Interaction
- Context dependencies of knowing and acting
- Representations of thoughts and actions
- Modeling facts and events

History of computational approaches to mind and action

Chair: [Ruth Hagengruber](#) (Lehrstuhl für Philosophie, Universität Paderborn)

Chair: [Uwe Riss](#) (SAP Karlsruhe, Germany)

TRACK VI

From Information to Knowledge Society

Information and communication technologies are changing the way we live, work, learn, and communicate and the way we understand. They are becoming a vital source and force of growth for the world economy and have the power to enable many individuals and institutions all over the world to address economic and social challenges. In this way, they contribute to the construction of true knowledge societies based on the sharing of information and incorporating all socio-cultural and ethical dimensions of sustainable development.

Connected with this track are (among others) the following philosophical questions:

- What is an information society?
- What is a knowledge society?
- What kind of knowledge society do we want to live in?
- Do we have the communication /information technology we need?
- Do we need the communication / information technologies, we currently have?
- How and during which period of time away can technological changes and their impact on society be measured?
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Chair: [Klaus Kornwachs](#) (Lehrstuhl für Technikphilosophie, TU Cottbus)

Chair: [Philip Brey](#) (Chair in Philosophy of Technology and Engineering Science, University Twente, Netherlands)

TRACK VII

IT, Cultural Diversity and Technoscience Studies

For whom and by who are technologies developed? Who and what are made visible or invisible by the standardizations and categorizations integral to techno scientific processes and artifacts? Who participates and on what and whose terms? Who is included in the construction of technological discourses and artifacts? How do issues concerning gender, class, ethnicity, age etc. and their intersectionality matter? How is the relation between ‘the’ social and ‘the’ technical through new technologies reconfigured? And throughout these questions, how do the various practices, beliefs, norms, and worldview(s) that constitute ‘culture’ further interact with these agents, factors, processes, as well as the conceptual frameworks of analysis we use to respond to these questions? Do new technologies – through their design and implementation, etc. – embed and foster the cultural beliefs and worldview(s) of their designers, thereby threatening cultural diversity with a technologically-mediated cultural imperialism? These are some of our main questions. We want to bring scholars together who are engaged in opening the black box of new technologies such as computing, AI, etc. and who want to challenge processes of normalizations. We invite research concerning culture, gender and diversity in technology/IT; critical analyses from science and technology studies, feminist/gender research, postcolonial studies and other social and cultural studies of techno scientific practices in general. We are also looking for conceptualizations and ideas with regard to possibilities for intervention, change and alternative technology design, “in the engine rooms of technological production” (Judy Wajcman).

Chair: [Jutta Weber](#) (Centre for Gender Research, University Uppsala, Sweden)

Chair: [Charles Ess](#) (Institute of Information and Media Studies, Aarhus University, Denmark)

TRACK VIII

Information Ethics and Roboethics

This track deals with all ethical, meta-ethical, social, political and legal issues related to the use and development of computers, cognitive ((semi-)autonomous) systems and information technology. This includes, but is in no way limited to, issues concerning privacy, intellectual property, robots, Internet governance, artificial agency, data gathering, digital divides, computer mediated communication, professional responsibility, globalization, cybercrime and foundational issues.

We welcome contributions from not only philosophers, but also scholars of law, social science, cultural studies, media studies and other fields of applied ethics, and encourage contributions from computer professionals working on ethical issues.

Chair: [Gordana Dodig-Crnkovic](#) (School of Innovation, Design and Engineering, Mälardalen University, Sweden)

Chair: [Kolja Kühnlenz](#) (Junior Fellow at IAS - Institute for Advanced Studies, TU München, Germany)

TRACK IX

Technological Singularity and Acceleration Studies

THEME

Historical analysis of a broad range of paradigm shifts in science, biology, history, technology, and in particular in computing technology, suggests an accelerating rate of progress, however measured. John von Neumann projected that the consequence of this trend may be an “essential singularity in the history of the race beyond which human affairs as we know them could not continue”. This notion of singularity coincides in time and nature with Alan Turing (1950) and Stephen Hawking's (1998) expectation of machines to exhibit intelligence on a par with to the average human no later than 2050. Irving John Good (1965) and Vernor Vinge (1993) expect the singularity to take the form of an 'intelligence explosion', a process in which intelligent machines design ever more intelligent machines. Transhumanists suggest a parallel or alternative, explosive process of improvements in human intelligence. Yet the very term ‘Singularity’ also suggests the emergence of an ‘event horizon’, an epistemological barrier on our ability to understand the events that may follow it.

Submissions

We invite submissions describing systematic attempts at understanding the likelihood and nature of these projections. In particular, we welcome papers examining the following issues from a philosophical, computational, mathematical, scientific and ethical standpoint:

- The nature of an intelligence explosion and its possible outcomes
- Safe and unsafe machine intelligence and preventative measures
- Technological forecasts of computing phenomena
- Projected impact of acceleration on science and society by 2050
- The nature of the Technological Singularity and its outcome
- Beyond the ‘event horizon’ of the Technological Singularity
- The prospects of various transhumanistic breakthroughs and likely timeframes

Chair: [Amnon Eden](#) (School of Computer Science and Electronic Engineering, University of Essex)

Chair: [Anthony Beavers](#) (Department of Philosophy, The University of Evansville, USA)

TRACK X

Crossroads

In his cult comic xkcd (www.xkcd.com) Randal Munroe imagined Whitehead and Russell working on a list to include all the possible sexual fetishes. Then they met Gödel and have the following dialogue:

Russell: Hey, Gödel — we're compiling a comprehensive list of fetishes. What turns you on?

Gödel: Anything not on your list.

Russell: Uh...hm.

So "Crossroads" is a little bit like that, whatever doesn't fit in the other categories might be well accepted here. Let me elaborate a little bit more on that. "Crossroads" is devoted to interdisciplinary research in the field of information philosophy. It can be applied proposals like philosophers and graphic designers working together in order to analyze how to improve visual affordances in a genetic engineering lab. It can also be theoretical work, trying to find whether Husserlian phenomenology applies to the way autonomous robots process information. In order to decide whether a proposal fits within "crossroads" territory we'll use the following criteria:

- 1) Proposals have to be interdisciplinary, implying combining knowledge, data and methodologies from two or more disciplines. Papers focuses in questions related to just one discipline should find other category that fits best to them.
- 2) Proposals should be able to generate further discussion, present bold ideas, finding unexpected ways to connect concepts. We prefer that to very accurate models tracking a very specific problem, as they will probably fit better in other categories.
- 3) Proposals coming from interdisciplinary teams are greatly appreciated. However, if an author is good enough and can master a couple of disciplines well enough to produce interesting results that would be more than fine too.
- 4) Both applied projects as well as speculative proposals are accepted.
- 5) Because proposals are going to combine knowledge from different disciplines, it is expected from authors to present this knowledge in a way that people not into that discipline can however follow arguments and proposals.

Chair: [David Casacuberta](#) (Philosophy Department, Universitat Autònoma de Barcelona)

Chair: [Jan von Leeuwen](#) (Faculty of Science, Information and Computer Science, Utrecht University, The Netherlands)