

International Association for Computing and Philosophy (IACAP)
First International Conference of IACAP:
celebrating 25 years of Computing and Philosophy (CAP) conferences

Conference Theme: “The Computational Turn: Past, Presents, Futures?”
Aarhus University – July 4-6, 2011

Important dates

Feb 15, 2011: Abstract submission deadline

March 15, 2011: Notification of acceptance

April 15, 2011: Early registration deadline

NB: Up to six bursaries of \$500.00 each will be awarded to authors of the best PhD student or post-doc extended abstract, in support of travel and related costs for attending IACAP’11.

Organizing Chair

Charles Ess (Department of Information- and Media Studies, Aarhus University)
<imvce@hum.au.dk>

KEYNOTE SPEAKERS

Presidential address: Tony Beavers, “Is Ethics Computable, or What Other than *Can* Does *Ought* Imply?”

Covey Lifetime Achievement Award: Terrell (Terry) Ward Bynum, Professor of Philosophy at Southern Connecticut State University; Director of the Research Center on Computing & Society. Lecture title: “Information and Deep Metaphysics”

Additional keynote to be announced.

Program Committee / Comité scientifique

- Tony Beavers (University of Evansville, USA: President, IACAP)
- Philip Brey, Department of Philosophy of Technology and Engineering Science, University of Twente, Netherlands
- Gordana Dodig-Crnkovic, School of Innovation, Design and Engineering, Mälardalen University, Sweden
- Luciano Floridi, University of Hertfordshire and University of Oxford, UK
- Jean-Gabriel Ganascia (Paris VI, Director of Laboratoire d’informatique de Paris)
- Ruth Hagengruber, University of Paderborn, Germany
- Soraj Hongladarom (Philosophy, Chulalongkorn University, Bangkok, Thailand)
- Teresa Numerico (Computer Science, University of Rome)
- Carson Reynolds (Information Science and Technology, University of Tokyo)
- Jean Sallantin, Directeur des Recherche au Laboratoire d’Informatique, de Robotique et de Microélectronique de Montpellier (LIRMM) (LIRMM), France
- Johnny Søraker (Philosophy, Twente, Netherlands)
- Mariarosaria Taddeo (Philosophy, Hertfordshire, UK)
- Jordi Vallverdú, Universitat Autònoma de Barcelona, Philosophy Department, Spain
- Jan van Leeuwen, Center for Philosophy of Computer Science, Utrecht University, The Netherlands
- Jutta Weber (Philosophy, Braunschweig / Vienna)

Committee: best PhD /post-doc paper awards (including bursaries)

Chair: Johnny Søraker (Twente: <j.h.soraker@utwente.nl>)

Conference Theme, “The Computational Turn: Past, Presents, Futures?”

In the West, philosophical attention to computation and computational devices is at least as old as Leibniz. But since the early 1940s, electronic computers have evolved from a few machines filling several rooms to widely diffused – indeed, ubiquitous – devices, ranging from networked desktops, laptops, smartphones and “the internet of things.” Along the way, initial philosophical attention – in particular, to the ethical and social implications of these devices (so Norbert Wiener, 1950) – became sufficiently broad and influential as to justify the phrase “the computational turn” by the 1980s. In part, the computational turn referred to the multiple ways in which the increasing availability and usability of computers allowed philosophers to explore a range of traditional philosophical interests – e.g., in logic, artificial intelligence, philosophical mathematics, ethics, political philosophy, epistemology, ontology, to name a few – in new ways, often shedding significant new light on traditional issues and arguments. Simultaneously, computer scientists, mathematicians, and others whose work focused on computation and computational devices often found their work to evoke (if not force) reflection and debate precisely on the philosophical assumptions and potential implications of their research. These two large streams of development - especially as calling for necessary interdisciplinary dialogues that crossed what were otherwise often hard disciplinary boundaries – inspired what became the first of the Computing and Philosophy (CAP) conferences in 1986 (devoted to Computer-Assisted Instruction in philosophy). Since 1986, CAP conferences have grown in scope and range, to include a bewildering array of intersections between computation and philosophy as explored across a global range of cultures and traditions. In keeping with what has now become a significant tradition, IACAP’11 will accept presentations across this array and range. At the same time, in order to recognize and celebrate the 25th anniversary of the CAP conferences, we specifically encourage submissions that include attention to the past, present(s), and possible future(s) of their foci as expressions of this computational turn.

SUBMISSIONS – due February 15, 2011

Authors should submit an electronic version of an extended abstract (total word count approximately 1000 words) to the chair of the track most closely affiliated with the proposed paper topic(s): see list of tracks and chair(s) below. The file should also contain a 350 word abstract that will be used for the conference web site/booklet.

NB: if you are a PhD- or post-doc student who would like for your extended abstract to be considered in the competition for the travel bursaries, be sure to indicate this in your submission.

PROGRAM

The conference is interdisciplinary: we invite papers from philosophy, computer science, robotics, engineering sciences, social sciences and related disciplines. Papers can address one (or more) of a range of topics at the conceptual crossroads between philosophy and computation, including: biocomputing, AI, logic, cognition, ontology, knowledge systems, simulations, robotics, affective computing, epistemology, information ethics (including robot ethics), history, and cultural perspectives on these. IACAP’11 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.

TRACKS

I. Philosophy of Computer Science

Chair: Raymond Turner (School of Computer Science and Electronic Engineering, University of Essex: <turnr@essex.ac.uk>)

Chair: Rainhard Bengesz (Philosophy of Science, Technology, and Engineering Department and Carl von Linde-Akademie, TU München: <bengesz@cvl-a.tum.de>)

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 artefacts, the nature and form of computational reasoning and the philosophical basis of computational modelling are welcome.

II. Philosophy of Information and Cognition

Chair: Orlin Vakarelov (University of Arizona: <okv@u.arizona.edu>)

The concept of information has played a central role in cognitive science. In the early days of the cognitive revolution, information entered cognitive science both through the notion of computation in the “information processing” approach to cognition, and through the notion of environmental information in the ecological program of Gibson. Cognitive science has seen many changes of course, but the notion of information has persevered in one form or another, both informally as a heuristic notion and formally as mathematical theory of information. Still there is a lot of confusion and cross talk among users and critics of information in modeling cognition. This track aims to provide a venue for a discussion of the possible role of information, especially philosophical theories of information, in investigating cognition and mind, as well as the possible role of cognition and mind for understanding semantic information. Questions of special interest include:

- (1) Is the notion of (semantic) information necessary for understanding cognition?
- (2) Can non-representationalist theories of cognition accommodate notions of information and information processing?
- (3) Is cognition/mind necessary for semantic information?
- (4) Can some notion of (physical) information be used as a basis for developing a general theory of cognition?
- (5) In cognition, does information reduce to computation?

- (6) How do standard problems in the philosophy of information (like the list of 18 problems Floridi suggests) relate to philosophical debates about cognition and mind, and *vice versa*?

These questions are intended only as a guide. Any philosophical topic that connects philosophical, physical or formal theories of information to the phenomenon of cognition is welcome, unless the topic fits more naturally in another track of this conference. If we judge that a submission fits better in another track, it will be forwarded to that track's referees.

III. Autonomous Robots and Artificial Cognitive Systems

Chair: Matthias Scheutz (Tufts University: <mscheutz@cs.tufts.edu>)

Chair: Mark Bishop (University of London: <m.bishop@gold.ac.uk>)

Capabilities such as perception, reasoning, learning, and planning allow "artificial cognitive systems" to perform increasingly complex tasks that have often been performed by humans. As a result, interesting philosophical questions arise about the nature of embodied and disembodied artificial cognitive systems, ranging from questions about the extent to which such systems "know what they are doing", to questions about whether such cognitive systems can have human-like mental states and experiences, to questions about agency and responsibility (e.g., in the case of autonomous robots that interact with humans in social settings).

In line with the general IACAP conference theme - computing and philosophy - this track is open to contributions from all disciplines, but has a particular focus on all aspects of artificial cognitive systems and the philosophical questions that arise from their instantiations and embodiments:

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

- Capabilities and limits of artificial cognitive systems
- The role of autonomous robots in theories of embodiment and situatedness
- Epistemology of autonomous cognitive systems
- Ethical implications of artificial cognitive systems
- Human mental concepts and artificial cognitive systems
- Human interactions with artificial cognitive systems
- Applications of artificial cognitive systems
- Comparison of artificial and natural cognitive systems

IV. Technosecurity: from Everyday Surveillance to Digital Warfare

Chair: Jutta Weber (Technische Universität Braunschweig: <jutta.weber@tu-bs.de>)

Chair: Doris Allhutter (Institut für Technikfolgen-Abschätzung, Österreichische Akademie der Wissenschaften: <doris.allhutter@oeaw.ac.at>)

The spread of convergent 'security' and surveillance architectures is a global phenomenon with its practices deeply embedded in everyday life. Tight networks of interconnected databases with biometrical, DNA or communication data, CCTV, robots, and other technologies are used to monitor inter/national borders, regulate the access to welfare benefits or money machines, target 'terrorists', perform 'crowd control' or select employees. Biological identification, (risk) profiling and anticipatory tracking systems are rapidly 'flourishing' and are becoming crucial tools – not only in military and law enforcement but business, health care, tourism, urban planning, transport, and many other fields. Thereby, security and surveillance technologies are functioning as mechanisms of standardization, social sorting and in- and exclusion along axes such as gender, dis/ability, class, 'race', and

religion. Along with the ubiquitous practices of surveillance and securitization, research in military technologies (robotic and digital warfare) and the development of dual use applications for ‘crowd control’ (non-lethal weapons, ubiquitous computing & sensory networks, etc.) have been exploding since the mid 1990s, while human rights and international law are at least partially undermined.

We invite contributions dealing with one of the following issues:

- Everyday practices of monitoring, tracking & risk profiling and the emergence of culture(s) of fear, security ‘needs’ and risk governance
- Surveillance technologies and human rights with regard to interdependent aspects of gender, dis/ability, class, ‘race’, and religion
- Mechanisms of standardization, categorization, in-/exclusion through technologies of In/Security
- Reconfiguration of bodies and identities through surveillance technologies
- The entanglement of surveillance, security and military technologies (dual use; proliferation of military technologies in civil life, etc.)
- Techno-security and (re-)militarization; aspects of (re-)militarization and its interplay with the (re-)masculinisation of society and everyday life

V. Information Ethics / Robot Ethics

Chair: John Sullins (Sonoma State University, CA: <john.sullins@sonoma.edu>)

Chair: Mark Coeckelbergh (Twente, the Netherlands: <m.j.k.coeckelbergh@utwente.nl>)

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.

VI. Multidisciplinary Perspectives

Chair: Jan van Leeuwen (Utrecht University, The Netherlands: <j.vanleeuwen@cs.uu.nl>)

Here we highlight papers written from multiple disciplinary approaches, addressing one or more topics characteristics of the computational turn – but that do not immediately fit within the other tracks listed here.

VII. Social Computing

Chair: Gordana Dodig-Crnkovic (Mälardalen University, Sweden: <gordana.dodig-crnkovic@mdh.se>)

Chair: Judith Simon (Institut Jean Nicod (ENS), Paris: <judith.simon@ens.fr>)

One of the most remarkable recent developments in computing undeniably lies in its social turn. Information and communication technologies (ICT) are increasingly characterized by the interaction between multiple users through those technologies. Widespread examples of *social software* are blogs, wikis, social bookmarking services, instant messaging services, email and social networking sites such as Facebook, LinkedIn or Academia.edu. Social

computing often uses various types of crowdsourcing techniques - aggregation of input from numerous users (public at large). Tools such as prediction markets, social tagging, reputation and trust systems as well as recommender systems are based on collaborative filtering and thus a result of crowdsourcing. So in this first understanding, social computing includes collaborative user-generated media with shared knowledge and community-building of societal ecosystem.

Another meaning of the term social computing refers to computational modeling of social behavior. Social computing constructs generative agent-based computational models in order to explain and predict the behavior of social systems.

Social computing in the first sense (with the focus on *social*) is a phenomenon which enables extended social cognition, while the second meaning of social computing (with the focus on *computing*) is computational modeling of (extended) social cognition.

In this track, we invite contributions that tackle theoretical and practical implications of both types of social computing.

The track addresses, but is not limited to, the following topics:

- Notions of *the social* used and/or enforced in social computing
- Notions of computing used in social computing
- Epistemological and ethical consequences of distributed modes of knowledge creation and distribution in social computing
- Philosophical implications of sociality in social networking sites (e.g. identity, privacy, social structures, etc.)
- How can *trust* in social computing be conceived? What are the differences and similarities between notions of trust e.g. in multi-agent systems, social networking sites, recommender systems, etc.? What are the differences and similarities between trust online and offline?
- Forming of individual existence in relation to social computing
- Epistemically and ethically responsible behavior with respect to social software and how it can be supported
- Computational models of social networks
- Consequences of social computing for extended social cognition

VIII. IT, Culture and Globalization

Chair: Soraj Hongladarom (Chulalongkorn University, Bangkok: <s.hongladarom@gmail.com>)

Chair: Philip Brey (Twente: <P.A.E.Brey@utwente.nl>)

This track focuses on a web of problems that emerge as a result of the interaction among IT, cultures and globalization. IT has been a powerful engine of globalization; not only is information itself moving at the speed of light, but the information embodies ideas, worldviews, as well as huge amount of funds. It also embodies either powerful way of keeping governments in line or potential threats to security in the case of Wikileaks, whose influence clearly is not limited only to the US. This flow of information does not respect national borders or cultural boundaries. It is very interesting to learn how we can come to terms with this phenomenon, especially in the philosophical, normative sense.

So we look for abstracts that deal, for example, with ethical implications of globalizing information as well as theoretical analysis of the phenomenon in terms of whether local cultures will be obliterated or whether they can retain their identities in one way or another. Papers dealing with IT, culture and globalization in other ways will be considered too.

IX. Surveillance, sousveillance ...

Chair: Jean-Gabriel Ganascia (University Pierre et Marie Curie, Paris: <Jean-Gabriel@Ganascia.name>)

Chair: Anders Albrechtslund (Aarhus: <alb@hum.au.dk>)

Papers for this track are not restricted to the traditional topics of this domain, which are more or less related to the violation of privacy due to the development of different information technologies (e.g. RFID, videosurveillance, health cards, etc.). The increasing presence of surveillance and sousveillance in multiple domains and ways raises many philosophical questions (including in ethics and political philosophy), e.g., the division between the private and the public sphere. At the same time, a number of researchers and commentators have noted positive aspects of, e.g., lateral and voluntary or participatory surveillance. Finally, the new political forms that are induced by total transparency are also of philosophical interest.

X: SIG Track –Machines and Mentality

Chair: Marcello Guarini (University of Windsor, Canada: <mguarini@uwindsor.ca>)

Chair: Paul Bello (Office of Naval Research: <paul.bello@navy.mil>)

The Society for Machines and Mentality (SFMM) is interested in advancing the philosophical understanding of issues involving artificial intelligence, philosophy, and cognitive science. This society has become a Special Interest Group (SIG) of IA-CAP. For its first ever IA-CAP track, the SFMM SIG invites papers dealing with machine implementable accounts of mental state attribution. Can machines attribute mental states (or “mind read”)? How might they be constructed to do so? (Theory-theory? Simulation Theory? Other approaches?) What constraints are operative on how we understand mental states, and how might these motivate or obviate attempts to computationally model mental state attribution? In what contexts might we want machines that could mind read? How does the machine attribution of mentality relate to other problems in the different subfields of philosophy (epistemology, ethics, metaphysics, ...).