What is Philosophy of Computer Science?
Experience from the Swedish National Course

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Abstract. This article presents experience from the Swedish National Course in Philosophy of Computer Science held at MDH University during 2004. Participants from a number of Swedish universities attended this cross-disciplinary course, organized for the first time, with the aim of introducing the research field of Computing Philosophy in Sweden.

The paper describes the organization of a PI - network which discussed the definition of the field of Philosophy of Computer Science (PCS) as well as its relations to Philosophy of Computing / Philosophy of Information, and selected suitable topics to be presented and discussed in the course.

The course consisted of lectures given by specialists within different fields of philosophy and computing, class discussions and the writing of individual research papers. The subjects of the lectures included philosophical issues such as the fundamental nature of computation, the methodology of Computer Science, the scientific ideal of the physical sciences, modeling and simulation issues and ethical, societal and artistic aspects of computing.

The course addressed the conceptual foundations of Philosophy of Computing / Philosophy of Information, examining critically the concept of computing, its models and metaphors, from data types to programming languages, programs to processes, and from architecture to abstraction. The use of the computational paradigm in related fields was explored in several parts of the course.

The results of the course included ten papers which have been published in journals and conference proceedings or are included as chapters in PhD theses. We hope to see the network activity and the course develop in the future, possibly as a distance course, in collaboration with colleagues in other countries. This will certainly broaden our experience and allow us to identify further relevant topics to be included in PCS.

Description of the Course

The project began with the initiation of the PI-network, (Philosophy of Computing and Informatics network) during 2003. Supported by KKS, (the Knowledge Foundation), its purpose was to prepare the Swedish National Course in Philosophy of Computer Science.

The Course in Philosophy of Computer Science was presented during the period January – May 2004, with the following syllabus.

I. PHILOSOPHICAL FOUNDATIONS

Introductory lecture: What is PI?,
Luciano Floridi, Oxford University

Physics as a traditional model of the ideal science for Philosophy of Science,
Lars-Göran Johansson, Uppsala University

Philosophical Foundations of Computation, Gordana Dodig-Crnkovic, MDH
II. METHODOLOGY, MODELING AND SIMULATION

Methodological Foundations of Computer Science, Erik Sandewall, Linköping University
Methodological and Philosophical Aspects of Modeling, Kimmo Eriksson, MDH, and Lars-Göran Johansson, Uppsala University
Critical Analysis of Computer Science Methodology, Björn Lisper, Jan Gustafsson, MDH

III ETHICAL AND SOCIETAL ASPECTS

Ethics, Professional Issues, Gordana Dodig-Crnkovic, MDH
Computers in Society - Culture and Art, Gordana Dodig-Crnkovic, MDH
AI and Ethics, Peter Funk

IV MINI CONFERENCE - Presentations of research papers written by course participants.

More information about the course may be found at http://www.idt.mdh.se/personal/gdc/PI_04/index.html

Discussion of the Course Content and what PCS is/might be

The discussions within PI-network about the course content were based on the books in the list of references, along with the web resources that may be found in the Virtual Library web page of the course, http://www.idt.mdh.se/~gdc/PI-network-library.htm

In this part of the paper we will present the details of the arguments about the definition of PCS.

Conclusions

One of the aims of the PI-network, (Philosophy of Computing and Informatics network) was to organize the Swedish National Course in Philosophy of Computer Science, with funding from KKS (the Knowledge Foundation). Participants from different universities (Blekinge, Dalarna, Mälardalen, Skövde, Uppsala) have taken part in the course and have presented their research papers at the Mini-conference. These have been documented in the Course Proceedings, http://www.idt.mdh.se/personal/gdc/PI_04/proceedings.pdf

The course demonstrated how PCS may be taught to different student groups with heterogeneous backgrounds and brought to light the questions course participants found most relevant in connection to their own research fields. It was found that philosophical foundations and methodology, modeling and simulation are of most interest. The publication, in conference proceedings and journals and as PhD thesis chapters, of ten papers related to the course, confirms the value of the course and its impact on related research fields.

We hope to see the network activity and the course develop in the future, possibly as a distance course, in collaboration with colleagues in other countries. This will certainly broaden our experience and allow us to identify further relevant topics to be included in PCS.

References

T R. Colburn, Philosophy and Computer Science, (1999)
The list of published articles, written in connection with the PI course


