Interdisciplinary Distance Learning in Computing and Philosophy

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Increasing Interdisciplinarity by Distance Learning: Examples Connecting Economics with Software Engineering, and Computing with Philosophy
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and experiences with Swedish national course

PHILOSOPHY OF COMPUTER SCIENCE
http://www.idt.mdh.se/personal/gdc/pi-network.htm
http://www.idt.mdh.se/personal/gdc/PI_04/index.html

and
course in software engineering and management of software development projects for students of management and economy.
Distance Interdisciplinary Courses

- Internet-based distance undergraduate course in software engineering and management of software development projects for students of management and economy. The goal of the course was to bridge the gap between disciplines of economy (management) and software engineering, transfer knowledge and provide necessary technical background for future managers who very likely in their careers will take part in software intense projects. Both the interdisciplinarity and the advanced e-learning technology of this course made it challenging.

- Specialized level Swedish National Course in Philosophy of Computing and Informatics for students of computing, philosophy and design, which was a combination of a campus-based and a distance course involving several Swedish universities, with a group of distinguished teachers from both Sweden and abroad. The critical challenge of this course was the establishing of a new inter-discipline and overarching the gaps between traditions of disciplinary thinking.
It is interesting to compare the experiences of two different courses aimed at strengthening interdisciplinary and cross-disciplinary competence and learning practices. The course in software engineering for managers was necessarily focused towards implementations and practical applications. The ambition to provide future managers and economists with a holistic view of management of software-intense projects turned out not to be simple to realize. Taking a holistic approach goes beyond exchanging basic facts between different knowledge communities. In many cases the basic facts are not sufficient to adequately describe specific cases of interest. Not only technical matters but also many informal, cultural factors can be expected to constitute barriers to reaching a common understanding between fields which are so far from each other that they usually do not communicate directly.
COMPUTING AND PHILOSOPHY

ARTS

COMP. ENG.

PHILOSOPHY

COMPUTER SCIENCE

COMPUTING
LECTURES – PART I

22 January

09-12 Introduction to Philosophy of Information – Luciano Floridi
13-14 Discussion on Introduction to PI
14-15 Physics as an “Ideal Science” - Philosophical Foundations and Consequences Lars-Göran Johansson
15-17 The Function of Natural Laws in Physics Lars-Göran Johansson

23 January

09-12 Philosophical Foundations of Computability Gordana Dodig-Crnkovic
13-14 Discussion on Phil. Found. of Computability
14-15 Planning for the Course and Mini-Conference Closing Remarks (GDC)
04 March

09-12 Methodological Foundations of CS
   Erik Sandewall
13-14 Discussion on Meth. Found. of CS
14-15 Critical Analysis of CS Methodology
   Björn Lisper, Jan Gustafsson
15-16 Discussion on Critical Analysis of CS
   Methodology, Björn Lisper, Jan Gustafsson

05 March

09-12 Modelling and Simulation
   Kimmo Eriksson, Lars-Göran Johansson
13-14 Discussion on Modelling and Simulation
14-15 DISCUSSION OF PAPER DRAFTS (GDC)
15-16 Closing Remarks
LECTURES – PART III

13 May

09-12 Ethics and Professional Issues in Computing
   Gordana Dodig-Crnkovic
13-14 Discussion on Ethics and Professional Issues in Computing
14-15 Ethics and AI (Peter Funk)
15-16 Discussion on Ethics and AI

14 May

09-16 MINI-CONFERENCE
16-17 Closing Remarks
Ahonen-Jonnarth Ulla Senior Lecturer, CS/Biology, Gävle University
Dodig-Crnkovic Gordana Senior Lecturer, CS/Physics, Mälardalen University
Gustafsson Jan Senior Lecturer Computer Science, Mälardalen University
Funk Peter Senior Lecturer (docent) Artificial Intelligence Mälardalen University
Lager Torbjörn Professor of General
and Computational Linguistics, Göteborg University
Lisper Björn Professor of Computer Engineering, Mälardalen University
Nivre Joakim Professor of Computational Linguistics, Växjö University
Odelstad Jan Senior Lecturer (docent) CS/Theoretic Philosophy Gävle University

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Why is Philosophy Important for Computing?

• "Thinking tool-box" - access to:
  • Paradigms
  • Metaphors
  • Historical examples (knowledge capital)

• Communication – both within computing community and wider

• Context – conceptual and cultural framework

• Humanist dimensions of higher education are important!

• Knowledge society – leads to automated production, organization and even automated discovery. Genuine human thinking abilities including creativity will make the difference!
Why is Computing Important for Philosophy?

- **Simulated or experimental philosophy. Experiments “in silico”** (or alternative constructed cognitive/computational systems): As an innovative extension of an ancient tradition of thought experiment, application of computational modeling schemes to questions in logic, epistemology, philosophy of science, philosophy of biology, philosophy of mind, and so on.
- **Computing paradigms and metaphors**
Results from the PI Course

• Participants from different universities (Blekinge, Dalarna, Mälardalen, Skövde, Uppsala, SICS Stockholm) 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](http://www.idt.mdh.se/personal/gdc/PI_04/proceedings.pdf)

• As a result of the course ten papers have been published in journals and conference proceedings or included as chapters in PhD theses.
Future Work

Extended network activity and future, possibly distance, courses in collaboration with colleagues in other countries:
- Peter Boltuc, University of Illinois at Springfield;
- Vincent Müller, American College of Thessaloniki;
- Jordi Vallverdú, Universitat Autònoma de Barcelona;
- Teresa Numerico, University of Bologna and the University of Salerno;
- Matti Tedre University of Joensuu, Finland,
- Russ Abbott, California State University, Los Angeles and a number of colleagues from Swedish Universities).
This will certainly broaden our experience and allow us to identify further relevant topics to be included.
Computation, Information, Cognition:
The Nexus and the Liminal

Editor(s): Gordana Dodig Crnkovic and Susan Stuart

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