 Artificial Intelligence & Machine Learning in critical and practical perspective

Participant guide to the seminar

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General info about DIKULT304 Spring Seminars in Digital Culture

Level of Study
Master and PhD

ECTS credits: 15

Objectives and Content
The master's program aims to provide a thorough introduction to digital culture, the theoretical and analytical methods, and work techniques. DIKULT304 is a seminar course in Digital culture, with emphasis on a central research topic in the field of digital culture. The course covers relevant theory in conjunction with a further limited theme. A central activity of the course is participation in discussions and oral presentations.

Required Previous Knowledge
None.

Recommended Previous Knowledge
DIKULT301 and DIKULT302 or equivalent.

Learning Outcomes
After taking the course the students should have:
- in-depth knowledge of key issues in digital culture related to the history, key methods, and applications of artificial intelligence, e.g., machine learning, cognitivism, connectionism, and situated intelligence.
- theoretical and practical knowledge and experience of academic argumentation, discussion and presentation

Students who complete the course should be able to:
- demonstrate depth of knowledge within the thematic area of Artificial Intelligence / Machine Learning.
- analyse and develop complex research questions in relation to concrete study cases of Artificial Intelligence / Machine Learning.
- prepare and deliver an effective academic oral presentation addressing the course theme.

Access to the Course

The course is open to all students with the right to study in the master’s or PhD program in Digital Culture at UiB. Students enrolled in other master’s programs at UiB can apply to LLE for permission to enrol in the course. Erasmus+ students are welcome. Additional tuition may be offered in languages other than English and Norwegian.

Teaching Methods and Extent of Organized Teaching

Teaching will be in the form of a weekly seminar over 13 weeks. If less than five students are registered to a course, the department might reduce the teaching, please see the department’s guidelines regarding this on http://mitt.uib.no. Regarding a course where this is a possibility the students get information about this at the beginning of the semester, and before the deadline regarding semester registration 1st February/1st September.

Compulsory Assignments and Attendance:
Two oral presentations before exam in the seminar group is a minimum. Compulsory assignments will be given during the two first course phase (Introduction and semester project development).

In order to take the exam was required that the student has participated in at least 75 percent of the teaching and in the classroom activities. Course participation is approved by the course leader.

Forms of Assessment

The final grade is based on the evaluation of 20 minutes long oral presentation on a given topic which is related to the course theme and the student’s individual seminar project. The theme of the lecture will be given 7 days before the exam.

The oral presentations will be arranged as a conference for participants in the course and the academic community (open to all).

Grading Scale

For Masters students: grade scale A-F.
For PhD students: grade scale Pass/Fail.

Reading List

The required reading is approximately 1000 pages, of which normally half or more is selected individually by the student in consultation with the instructor.
Course Evaluation
Evaluation will be conducted in accordance with the University of Bergen's quality assurance system.

Examination dates
Check StudentWeb and Course Web

Information about DIKULT304 Spring 2019

Course leader:
Daniel Apollon
Associate Professor of Digital Culture
Department of Linguistic, Literary and Aesthetic Studies
University of Bergen
Address: PB 7805, 5020 BERGEN
Email: Daniel.Apollon@uib.no

Invited lecturers (to be confirmed):
Nadine Desrochers, Université de Montréal, Canada (A.I. and library science)
Nivedita Gangopadhyay, UiB/ Dept. of Philosophy (consciousness and cognition)

Information meeting
Date: January 8, 2019, 10:15-11:00 (check date and location in StudentWeb)
Sydnesplassen 12-13, Room 207

Location (regular course sessions)
Tuesdays 10:15-13:00
Øisteins gate 3, Seminar room 418

Detailed course schedule
To be released at the orientation meeting.
Seminar topic 2019

Artificial Intelligence & Machine Learning in critical and practical perspective

Course participants will explore the history, diversity of Artificial Intelligence/Machine learning. The seminar involves dealing with the history, ideologies, claims, and applications of various theoretical and practical approaches to Artificial Intelligence. They will acquire first-hand knowledge of the genesis, evolution and diversification of various techniques and ambitions related to Artificial Intelligence (A.I.) The course participants will acquire a sound overview of the history of A.I., e.g., through analysing concrete instances, programmes and real-world applications or prototypes.

The course does not require previous knowledge of algorithmic, mathematics, nor cognitive psychology, neuroscience, or philosophy of mind. However, any previous experience in these fields will contribute positively to the seminar.

The first part of the seminar will be devoted to acquiring key conceptual tools, historical overviews, and elementary insight in key machine learning techniques that will enable the course participants to analyse current or past A.I. applications from a historical, cultural, aesthetic, ethical, or philosophical perspective. Particular attention will be given the claim of General Artificial Intelligence (GOFAI).

Assignments (presentations, posters and discussions) will encourage participants to develop analytical and critical skills by e.g., comparing various contemporary instances of applications, and approaches.

After the first part of the seminar each participant will have submitted an individual project proposal.

The second part of the master seminar will be devoted to supporting individual projects. Individual as well as group supervision will be offered when needed. Each individual project will be finalised as a written assignment (academic paper or practical project report) or practical or artistic project which will need to be delivered and accepted as prerequisite for being allowed to take the final exam. Projects which will boost the planned Master or PhD project of participants will be encouraged.

The third and last part of the seminar will be devoted to supporting the completion of individual projects.

The oral examination will be organised as a full-day open seminar, during which the participants who have enrolled for examination will present and defend an assigned topic related to their individual project.
A few quotes from the course authors

“AI has given us a much greater understanding of the richness and subtlety of the human mind. Years ago, just as AI research was taking off, Pat Winston, a talented young developer and later director of MIT’s Artificial Intelligence Lab, was told to take the summer and create a vision system for the robot they were developing. In retrospect, the idea that one could program a system as intricate and involved as human vision over a summer is a ludicrous proposition, but the point was that at the time, theoretical psychologists and others had little understanding of just how much was involved. AI has played a very large role in giving us a framework to gain that understanding. Our minds are virtual machines, and AI has given us a way to think about how our brains process information in rigorous and systematic terms. That’s where the real breakthroughs have occurred, in my opinion.

Machines are very much better at understanding than they were before. They’re able to solve subtle things, pick up nuances in word usage, and so forth. But none of that is grounded in true human understanding. We need to understand what the brain is doing and how it’s doing it. Deep learning and other advances continue to generate useful applications, but considerable work remains at the analytical level to understand how human cognition works in supporting problem-solving and critical thinking and creativity.

The human mind is the most advanced system we have, and language in particular is hugely complex. AI and computing have progressed tremendously, but the capabilities remain quite limited. I doubt that computing will ever fully replicate the potential of the human mind, certainly not within the next few decades.

I’m interested in how computational technology can help us understand human creativity. Many examples of creativity involve learning and exploring in a hierarchical style. Neural and multilayer network systems can help us construct different frameworks to better understand those hierarchies, but there’s much more to learn and discover. If you have a computer that comes up with random combinations of musical notes, most of that stuff will be utterly uninteresting rubbish, but some of it will not be. A human being who has sufficient insight and time could well pick up an idea or two. A gifted artist, on the other hand, might hear the same random compilation and come away with a completely novel idea, one that sparks a totally new form of composition. That’s a very different type of creativity. About 95% of what professional artists and scientists do is either exploratory or combinational, and the other 5% is transformational creativity. At the moment, we don’t really have a good understanding of these processes. That’s where AI has the potential to play a powerful role.

[..] We need to approach AI in a multidisciplinary way because the brain itself is a bundle of interdependent elements which support thinking and behavior that’s describable on many different levels. To accelerate our understanding of human cognition, neuroscientists, linguists, psychologists, philosophers, anthropologists, deep learning experts and others need to come together. All these questions about creativity and aesthetics and various sorts of thinking and behaving, they all in the end boil down to questions about information processing, and that’s why they are all so closely linked.

In some ways, we need to get back to our roots. When AI was just getting going there were these eclectic, provocative conferences where people from all different areas would come and learn. As is the way of things, we began to specialize over time and interdisciplinarity decreased. To catalyze discovery, we need to re-embrace that eclecticism and variety and collaborate more closely.”

Margareth Boden
“Very generally, artificial intelligence (AI) is a cross-disciplinary approach to understanding, modelling, and replicating intelligence and cognitive processes by invoking various computational, mathematical, logical, mechanical, and even biological principles and devices. On the one hand, it is often abstract and theoretical as investigators try to develop theories that will enrich our understanding of natural cognition or help define the limits of computability or proof theory. On the other hand, it is often purely pragmatic as other investigators focus on the engineering of smart machines and applications. Historically, its practitioners have come from such disciplines as logic, mathematics, engineering, philosophy, psychology, linguistics, and, of course, computer science. It forms a critical branch of cognitive science since it is often devoted to developing models that explain various dimensions of human and animal cognition. Indeed, since its inception in the mid twentieth century, AI has been one of the most fruitful new areas of research into the nature of human mentality. Today, it is impossible to be a serious cognitive scientist or philosopher of mind without at least some familiarity with major developments in AI. At the same time, anyone who uses modern technology is probably enjoying features that, in one way or another, had their origin in AI research, and AI technology will undoubtedly play an increasingly large role in our lives in coming decades.”

The Cambridge Handbook of Artificial Intelligence
Edited by Keith Frankish, The Open University, Milton Keynes, William M. Ramsey, University of Nevada, Las Vegas, Cambridge University Press, 2014.
Artificial Intelligence: A Very Short Introduction
Margaret A. Boden

Margaret Boden, OBE, is Research Professor of Cognitive Science at the University of Sussex, and one of the best-known figures in the field of Artificial Intelligence. She has written extensively on the subject, most recently the two-volume work Mind as Machine: a history of cognitive science (2006). She has lectured widely, to both specialist and general audiences across the world, and has appeared on many radio and TV programmes, in the UK and elsewhere. She was awarded an OBE in 2001 for 'services to cognitive science.'

“The applications of Artificial Intelligence lie all around us; in our homes, schools and offices, in our cinemas, in art galleries and - not least - on the Internet. The results of Artificial Intelligence have been invaluable to biologists, psychologists, and linguists in helping to understand the processes of memory, learning, and language from a fresh angle.

As a concept, Artificial Intelligence has fuelled and sharpened the philosophical debates concerning the nature of the mind, intelligence, and the uniqueness of human beings. In this Very Short Introduction, Margaret A. Boden reviews the philosophical and technological challenges raised by Artificial Intelligence, considering whether programs could ever be really intelligent, creative or even conscious, and shows how the pursuit of Artificial Intelligence has helped us to appreciate how human and animal minds are possible.”
Reading list – compulsory readings

This list may be subject to updates.

Course participants are strongly encouraged to read Margaret A. Boden’s introduction in preparation of the seminar.

Introductory reading

In-depth readings


All these book will be available as paperback at the university bookshop. There are also electronic version available at Amazon Kindle.

Individual readings
Participant will produce an individual reading list related to their individual project in collaboration with the course leader.

Suggested additional readings will be added to the course file storage.