Strategic Digital Issues

ECTS credits
4 credits

Semester
Spring

In brief

Course langage: French

Presentation

Prerequisites

Common core courses

Learning objectives

This module draws on different disciplines to present the strategic issues of digital technology.
The aim of this teaching is to give students a good knowledge of the stakes, the orders of magnitude, the evolution and the performances in digital and industrial computing. The representation and modeling of knowledge and reasoning are also studied as they are very much used in particular in AI.

Description of the programme

Randomness and determinism in science and technology
Review of the introduction of randomness in 20th century physics, its consequences and discussion of its role in information processing technologies.

Learning and Deep Learning
The strategic issues of deep-learning and learning are presented.

Computational Neuroscience
An introductory course presenting the main issues related to the modeling of information processing in the brain.

Human visual perception

What are the factors that explain our perception of the world around us? Different aspects will be studied: anatomical, psychological, cognitive.

Cryptography
Technical and historical overview.

Problems of knowledge representation
Working on symbolic representations of knowledge and using the notion of heuristics, artificial intelligence (AI) systems allow a correspondence with the real world.

Material processing of information
Faced with the extremely rapid evolution of electronic components and their technology, every engineer must have a general culture in this field that allows him/her to anticipate and adapt to technological changes.

Seminars: External

Generic central skills and knowledge targeted in the discipline

This module aims to give a broad vision of the economic, scientific and technological issues in the digital domain.
It thus aims to develop the ability to define a long-term strategy and to identify the interactions between elements.

How knowledge is tested

Continuous Assessment:
CC1 Randomness and Determinism in Science and Technology and Human Visual Perception: 1 written paper - 26%
CC2 Computational Neuroscience: 1 report - 18% CC3 Cryptography: 1 report - 12
CC3 Cryptography: 1 paper - 12%.
CC4 Problems of knowledge representation: 1 average of 3 papers - 26% CC5 Material information processing: 1 average of 2 papers - 18
CC5 Material processing of information: 1 report - 18

Teaching team

- T.Artières
- G. Bérardi
- E. Daucé
- C. Fossati
- C. Jazzar
- P. Préa
- Ph. Réfrégier
- M. Roche

Total des heures **42h**

CM	Master class	40h
TD	Directed work	2h

Useful info

Name responsible for EU

Lead Instructor
Muriel Roche
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