CCNM17-101: Introduction to Cognitive Science
Course Description

Aim of the course

Aim of the course: Historical and conceptual introduction to cognitive science from a combined philosophical, psychological, biological and computational point of view. We start with the prehistory of the cognitive paradigm and discuss how cognitivism endeavours to solve its problems. We characterize classic cogsci from the point of view of language, formal systems, and computations and discuss its basic philosophical underpinnings as well as the arising problems. Then we turn to connectionism and the soft computing, brain theory inspired metaphors of the mind, to conclude with the modern picture (and its criticism) in embodiment, the "dynamic hypothesis" as well as the new philosophy of mind.

Learning outcome, competences

knowledge:

- The student understands the basic concepts and the introductory theories of cognitive sciences
- The students knows the most important expressions and phenomena of cognitive sciences
- The student develops an overview of the basic of cognitive sciences

attitude:

- comprehensive theoretical interest
- Open-minded attention
- Problem-focused thinking
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skills:

- Develop questions about the cognitive sciences
- Ability to understand and use scinetific literature of cognitive sciences and related fields
- Ability to expertly use the terminology of cognitive sciences
- Skills af applying main experimental research methods,

Content of the course

Topics of the course

- I. The Nature of Cognitive Science
- 1. From Behaviorism to Cognitivism
- 2. Intentionality, Folk Psychology and the Animals
- 3. Functionalism and the Mind/Body Problem
- II: The Representational Theory of the Mind
- 1. Mind and Language. The Classical Symbolic Picture
- 2. Origins of the Computer Methaphor
- 3. Can Machines Think? The Turing Test and Understanding
- III. The Subsymbolic Paradigm and Related Matters
- 1. Connectionism
- 2. Elimination, Supervenience and Identity Theories
- 3. Individualism versus the Social Theory of Mind
- IV- Mind and Body

- 1. Consciousness and Qualia
- 2. The Dynamic Hypothesis
- 3. Embodiment
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Learning activities, learning methods

Evaluation of outcomes

Learning requirements, mode of evaluation, criteria of evaluation:
requirements
- Active participation in discussions.
- Written exam.

mode of evaluation: 1-5 scale
criteria of evaluation:
- Knowledge on basic concepts
- the skill of utilizing the modells and methods of cognitive sciences

Reading list

- **Recommended reading list**
- A Reader in Cognitive Science (n.d.). Retrieved from http://hps.elte.hu/~gk/books/cogreader.html
- I/1. From Behaviorism to Cognitive Science
- Sellars, W. (1963). Science, Perception and Reality. London : Routledge & Kegan Paul.
- Skinner, B: (1938). The Behavior of Organisms. Englewood Cliffs: Prentice Hall.
- Tolman, E. C. (1932). Purposive Behavior in Animals and Men. New York: Century.
- I/2. Intentionality, Folk Psychology, and Animal Intelligence
- Searle, J. R. (1983). Intentionality: An essay in the philosophy of mind. Cambridge: Cambridge University Press.
- Goldman, A. I. (1993). The psychology of folk psychology. Behavioral and Brain Sciences 16, 15-28.
- Stich, S. (1983). From Folk Psychology to Cognitive Science. Cambridge, Mass: MIT Press.
- I/3. The Mind-Body Problem. Functionalism
- Dennett, D. C. (1991). Consciousness Explained. Boston: Little Brown.
- Putnam, H. (1960). Minds and machines. In: S. Hook (Ed.), Dimensions of Mind (pp. 362-385). New York: New York University Press.
- Block, N. (1995). The mind as the software of the brain. In E. E. Smith & D. N. Osherson (Eds.), Thinking: An invitation to the cognitive science (pp. 377-425). Cambridge, MA: MIT Press.
- II/1. Mind and Language. The Representational Conception
- Millikan, R.G. (1984). Language, Thought and Other Biological Categories. Cambridge, Mass: MIT Press.
- Chandler, D. (1999). Semiotics for Beginners. Retrieved from http://www.argyroneta.com/s4b/semiotic.html
- Chomsky, N. (1963). Language and mind. New York: Harcourt Brace Jovanovich.
- Fodor, J. A. (1981). Representations: Philosophical Essays on the Foundations of Cognitive
- Science. Cambridge, Mass: MIT Press.

- II/2. The Computational Metaphor
- Floridi, L. (2000). Philosophy and Computing: A Webliography. Retrieved from http://www.wolfson.ox.ac.uk/~floridi/webliography.htm
- Lee, J. A. N. (2000). History of Computing. Retrieved from http://ei.cs.vt.edu/~history/IEEE Computer Society: The History of Computing, http://www.computer.org/history/
- II/3. Can Machines Think?
- Turing, A. M. (1950). Computing machinery and intelligence. Mind LIX(236), 433-460. Retrieved from http://hps.elte.hu/~gk/books/cog/turing.htm
- Weizenbaum, J. (1965). ELIZA - A computer program for the study of natural language communication between man and machine. Communications of the Association for Computing Machinery 9(1), 36-45. ELIZA (n.d.). Retreived from http://hps.elte.hu/~gk/Eliza/index.html
- Loebner-prize (n.d.). Retrieved from http://hps.elte.hu/~gk/Loebner/TT.html
- III/1. Symbolic and Subsysmbolic Processing
- Newell, A. (1980). Physical symbol systems. Cognitive Science 4, 135-183.
- Newell, A., & Simon, H. (1976). Computer science as empirical enquiry: Symbols and search. Communications of ACM 19, 113 -126.
- McCulloch, W. S., & Pitts, W. S. (1943). A logical calculus of the ideas immanent in nervous activity. Bulletin of Mathematical Biophysics 7,115 - 133.
- McCulloch, W. S. (1965). Emodiments of Mind. Boston, Mass: MIT Press.
- IV/2. Dynamical Models of the Mind
- Chomsky, N. (1965). Aspects of the Theory of Syntax. Cambridge, Mass.: MIT Press.
- Fodor, J. A. (1981). Representations. Cambridge, Mass.: MIT Press.
- Fodor, J. A., & Pylyshyn, Z. (1988). Connectionism and cognitive architecture: A critical analysis, Cognition 28, 3-71.