Course name: **Artificial intelligence algorithms**

Number of hours: 45

Course duration: 1 semester

ECTS: 6

Course description:

As part of the course, the student acquaints with modern artificial intelligence algorithms. The student develops the ability to independently and creatively solve encountered problems during the realization of a project.

Learning outcomes:

The student knows and understands selected modern artificial intelligence algorithms. The student knows and understands possible areas of real-life applications of artificial intelligence algorithms. The student can implement modern artificial intelligence algorithms using selected programming tools and libraries. The student can carry out experiments using the developed artificial intelligence algorithms. The student can analyze and interpret the results of experiments performed with the use of developed artificial intelligence algorithms. The student can prepare a presentation showing the most important outcomes of the performed research.

The student is able to critically asses non-technical aspects and consequences of the applications of artificial intelligence algorithms.

Literature:

1. Floreano D., Mattiussi C., Bio-Inspired Artificial Intelligence: Theories, Methods, and Technologies, The MIT Press, 2008.

2. Pétrowski A., Ben-Hamida S., Evolutionary Algorithms, ISTE Ltd and John Wiley & Sons, London, UK and Hoboken, USA, 2017.

3. Simon D., Evolutionary Optimization Algorithms, John Wiley & Sons, Inc., Hoboken, New Jersey, 2013.

4. Price K. V., Storn R. M., Lampinen J. A., Differential Evolution. A Practical Approach to Global Optimization, Springer-Verlag, Berlin Heidelberg, 2005.

5. Russell S., Norvig P., Artificial Intelligence: A Modern Approach, Pearson, 2010.
6. Wooldridge M., An Introduction to MultiAgent Systems, Wiley, 2009.
7. Ferber J., Multi-Agent Systems: An Introduction to Distributed Artificial Intelligence, Addison-Wesley, 1999.
8. Sarker R.A., Ray T., (ed.), Agent-Based Evolutionary Search, Springer, 2010.
9. Engelbrecht A.P., Fundamentals of Computational Swarm Intelligence, Wiley, 2005.
10. Dorigo M., Stützle T., Ant Colony Optimization, The MIT Press, 2004.
11. Lee R.S.T. (ed.), Computational Intelligence for Agent-based Systems, Springer-Verlag, 2007.

Course type:
Project classes

Assessment method:
Execution of a project. Presentation of the results.

Prerequisites:
The students should be able to write programs in Java/Python/C++ or another programming language in which it is possible to implement a selected AI algorithm.

Lecturer:
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