

Tárgy neve: Machine Learning

Tárgyfelelős neve: Horváth Tamás

Tárgyfelelős tudományos fokozata: PhD, adjunktus

Tárgyfelelős MAB szerinti akkreditációs státusza: AT

Az oktatás célja angolul:

a) knowledge

- In order to be able to perform their work in an innovative way and do research (when necessary) in their own IT specialization, they have comprehensive and up-to-date knowledge of general mathematical and computing principles, rules and relationships, particularly – depending on their chosen specialization – in the following areas: algebraic, linear algebraic and number theory methods and applications, special fields of mathematical analysis, numerical methods and their applications; discrete mathematics, graph theory, logic and their applications; theoretical basics and applications of stochastic modelling and statistics; first-order and second-order statistical analysis, operation research; algorithmic methods in mathematics, formal models and tools in computing science, complexity and efficiency theory of algorithms, and special algorithms of application fields.
- They have comprehensive and up-to-date knowledge of specific IT tools, particularly – depending on their chosen specialization – in the areas of numerical computing systems, model analysis, scientific computing methods, digital signal and image processing, artificial intelligence methods, software methods of operation research and optimization, modern programming languages and paradigms, the usage of modern programming languages; theoretical foundations and applications of information systems; distributed and parallel systems, expert systems; information technology and application security, geoinformatics; the construction and organization of health information systems; new methods of information management and organization, corporate (enterprise & business) information systems, services of information systems implementing corporate (enterprise & business) processes; digital signal and image processing, computer graphics; web and multimedia applications, and media informatics.
- They have a high level of fluency in the language of IT – including its professional vocabulary and its characteristic features of expression and composition – both in their mother tongue and in English, at least.

b) skills and abilities

- They are able to apply their mathematical, computer science and informatics skills in a novel way in order to solve tasks in IT research and development.
- They are able to formalize complex IT tasks, to identify and study their theoretical and practical background and then to solve them.

c) attitude

- They follow professional and technological developments in their IT field.
- They are committed to lifelong learning and they are open to acquiring new IT competencies.

d) autonomy and responsibility

- They take responsibility for their professional decisions made in their IT-related activities.

Az oktatás tartalma angolul:

decision trees;
support vector machines and kernel methods;
graphical and probabilistic models;
neural networks;

factorization techniques;
semi-supervised learning;
ensemble techniques, bagging, boosting;
time-series mining;
text-mining;

A számonkérés és értékelés rendszere angolul:

continuous assessment, examination

Idegen nyelven történő indítás esetén az adott idegen nyelvű irodalom:

- Ethem Alpaydin (2014). Introduction to Machine Learning. The MIT Press.
- Shai Shalev-Shwartz, Shai Ben-David (2014). Understanding Machine Learning: From Theory to Algorithms. Cambridge University Press.
- Christopher Bishop (2006). Pattern Recognition and Machine Learning. Springer-Verlag.