Laboratory for Cognitive Modeling

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Research Activities

Laboratory for Cognitive Modeling (LKM) was officially founded in December 2001. LKM carries out research in cognitive modeling, machine learning, neural networks, picture and data mining. Research results concern the modeling of noisy data related to cognitive, medical, biological and other processes. We are developing, testing and applying new approaches and algorithms for modeling from numeric, symbolic and pictorial data. LKM collaborates with psychologists, physicians, biologists, physicists and chemists. A notable aspect of much of this research is its application to problems in image analysis, medical diagnosis, ecological modeling, alternative medicine, studies of consciousness and manifestation of cognitive processes and consciousness through subtle energies.

Teaching

The staff of LKM is engaged in teaching the following courses: Programming Languages, Artificial Intelligence Methods, Algorithms and Data Structures 1, Knowledge Engineering, Fundamentals of Algorithms and Data Structures 2, Database Systems 1 and 2, Introduction to Databases, Machine Learning (postgraduate), Knowledge Discovery in Databases (postgraduate).

Equipment

The computer equipment consists of a network of a dozen Windows and Linux-based personal computers and servers, laser and ink jet printers. We also use Crown-TV camera for Gas Discharge Visualization and Olympus BX51 Microscope with digital camera.

Recent projects and collaboration

Knowledge synthesis from data and background knowledge: Basic research project funded by Slovenian Ministry of Education, Science and Sports.

Reliable and Comprehensible Machine Learning Approaches with Applications to Medical Diagnostics and Bioinformatics: Bilateral project funded by Slovenian and Greek Ministry of science.

Cost sensitive intelligent data analysis: Postdoc research project funded by Slovenian Ministry of Education, Science and Sports.

Intelligent data analysis in medicine: Basic research project funded by Slovenian Ministry of Science and Technology.

Several applicative projects concerning intelligent data analysis and data mining.

Several applicative projects concerning the analysis of various subtle influences on human and plant GDV pictures.

Collaboration with academic institutions

Technical University SPIFMO, St. Petersburg, Russia, University of Sydney, Australia, University of Stuttgart, Germany, Limburg's University Center, Belgium, University of Ioannina, Greece, University of Porto, Portugal, Biotehnical Faculty, University of Ljubljana, Faculty of Arts, University of Ljubljana, Faculty of Public Administration, University of Ljubljana, FRI, Computer Vision Lab and Artificial Intelligence Lab.

Collaboration with research institutions

Research Institute of Organic Agriculture, Frick, Switzerland, Research Institute Aco de Paou, Valernes, France, Institute for Bioelectromagnetics and New Biology BION, Ljubljana, Jozef Stefan Institute, Ljubljana, University Clinical Center, Ljubljana.

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