Intelligent data mining, visualization and image processing

Keywords: Data Mining, Multidimensional Data Visualization, Dimensionality Reduction, Big Data, Image Processing, Recommendation System, Artificial Neural Networks, Machine Learning, Deep Learning, Cloud Technologies, Blockchain Technologies.

Vilnius University

Research group activities

New technologies have boosted the ability to store, process and analyse the massive data. As Cloud-based technologies and platforms gain in popularity, new data mining and machine learning algorithms have been developed as the Cloud services. Moreover, another new trend known as big data brings new challenges to data mining due to large volumes and different varieties of data. The common methods and tools for data processing and analysis are unable to manage such data by conventional ways. Thus, the Cloud and big data not only yield new data storage and processing mechanisms but also introduce ways of the intelligent data mining and image processing.

The aim of our research is to develop and investigate methods and techniques for intelligent data mining, visualization and image processing that allows solving complex problems of knowledge discovery in big data era, namely:

- intelligent visual analytics for big data analysis to get deeper insights into the data of various nature in medicine, technologies, and social sciences;

- innovative data mining framework using the synergy of the possibilities of Cloud computing and machine learning to make data mining effective and easily understandable for data scientists and business intelligence professionals;

- development of the image processing and analysis tool to extend the functionalities of a decision support in medical diagnostic systems;

- creation of the recommendation systems to predict the most suitable products or services on the basis of the user's preferences and constraints;

- application of blockchain technologies for effective collaboration of science and business.

Proposal

We look for collaboration with academic and industry partners in these research areas:

- Data mining solutions and techniques in medicine, technologies, social sciences, and case-studies via solving the classification, clustering, pattern recognition, knowledge discovery and visualization problems.

- Image processing and analysis solutions implemented in a decision support tool for medical diagnostic systems. Applications include such fields as eye fundus analysis, identification of lesion in a prostate (but not limited to).

- Blockchain solutions for science and business.

- The solutions of big data analytics for data scientists and business intelligence professionals to facilitate the processes of knowledge discovery and decision making.

- The solutions of recommendation systems to predict the most suitable products or services on the basis of the user's preferences and constraints.

We seek partners for developing competitive research projects targeting HORIZON 2020 and other international programs.

Meet our team

Leader of the group - Prof. Habil. Dr. Gintautas Dzemyda

Research staff: Prof. Dr. Olga Kurasova, Assoc. Prof. Dr. Povilas Treigys, Dr. Virginijus Marcinkevičius, Prof. Dr. Audronė Jakaitienė, Assoc. Prof. Dr. Ernestas Filatovas, Dr. Jolita Bernatavičienė, Dr. Viktor Medvedev, Dr. Rasa Karbauskaitė, Dr. Aurimas Rapečka, Dr. Laura Ringienė, Vytautas Tiešis, Dr. Martynas Sabaliauskas, Laimutė Mikalauskienė, Dr. Remigijus Paulavičius.
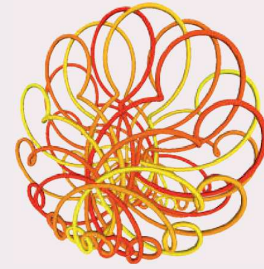
3D Data

Research outcomes

Participating in the EU funding programmes: COST (5 Actions: SoftStat, BIG-SKY-EARTH, cHiPSet, OpenMultiMed, NEUBIAS), Erasmus+ (agreements with 20 universities in 10 states), Euro-Stars, etc.

- Theoretical and Engineering Aspects of E-Service Technology Development and Application in High-Performance Computing Platforms;

- PEN – Production Effectiveness Navigator, EuroStars project E!6232;

- Development program of the technology project "Information technology tools of clinical decision support and citizens" wellness for the e-Health system (Info Health).

Contacts

Prof. Habil. Dr. Gintautas Dzemyda
Institute of Data Science and Digital
Technologies
Vilnius University

Phone: +370 5 2109300
E-mail: gintautas.dzemyda@mii.vu.lt

More about the institute: https://www.mii.lt

Department for Research and Innovation
Vilnius University

Phone: +370 5 268 7006
E-mail: innovations@mid.vu.lt

More information: http://www.innovations.vu.lt