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CIDMA

CENTRO DE I&D EM MATEMÁTICA E APLICAÇÕES  
CENTER FOR R&D IN MATHEMATICS AND  
APPLICATIONS

## Seminário

Grupo de Probabilidades e Estatística

26 de setembro de 2019 16:00

Sala Sousa Pinto

# Data mining and optimisation solutions in medicine applications

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### Abstract

Last decade of computer development changed the quality of digital medical data. We can collect and have access to various types of data from different kinds of sensors, equipment and the question of how to make the most of the data arises.

Nowadays, medicine can monitor not only diagnostics or treatment methods but also the changes in health and concepts of diseases. Data mining and optimisation methods have been played an essential role in the intelligent medical system. Researchers of Institute Data Science and Digital Technologies of Vilnius university have been applying various algorithms and techniques like classification, clustering, regression, artificial intelligence, neural networks, decision trees, optimisation algorithms, etc., to help health care professionals with improved accuracy in the diagnosis of various disease.

It will be an excellent opportunity to present one of the more actual interdisciplinary research areas involving advanced computing and digital technologies which are developed of our institute:

- cloud-based medical diagnostic image analysis intelligent tool for early diagnosis of pathological changes (eye fundus images);
- a developed method for registering the transversal plane images from computer tomography scans;
- computer-aided localisation and characterisation of prostate cancer in mpMRI;
- machine learning based classification of colorectal cancer tumour tissue in whole-slide images;
- application of objective voice quality estimators for detection of laryngeal diseases (vocal nodules, polyps) and traumas (unilateral or bilateral paresis/paralysis), estimation of singing quality;
- method for visual detection of similarities in medical streaming data.

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