Subject code	Credits
INF5023	6

Course title in Lithuanian

SKAITMENINIŲ VAIZDŲ APDOROJIMAS

Course title in English

DIGITAL IMAGE PROCESSING

Short course annotation in Lithuanian (up to 500 characters)

Kursas skirtas supažindinti su skaitmeninių vaizdų apdorojimo metodais ir priemonėmis. Kurse studentai sužinos apie vaizdų tobulinimo ir atstatymo, apdorojimo panaudojant spalvinę informaciją, suspaudimo, morfologinio apdorojimo, segmentavimo, aprašymo ir atvaizdavimo, objektų ir jų briaunų nustatymo vaizduose bei kitus praktikoje naudingus vaizdų apdorojimo metodus ir išmoks juos taikyti praktikoje panaudojant esamus programinius įrankius.

Short course annotation in English (up to 500 characters)

The aim of the course is to provide the student with the theoretical and practical knowledge of digital image processing methods and techniques. The content includes: image enhancement and restoration, colour image processing, image compression, morphological image processing, image segmentation, representation and description, edge detection and object recognition. Students will learn how to use existing image processing software tools to complete different image processing tasks.

Prerequisites for entering the course

Basic knowledge of mathematics and programming

Course aim

Provide the student with the theoretical and practical knowledge of digital image processing methods and techniques.

Content

No.	Content (topics)
1	Introduction to image processing techniques, practical examples
2	Computer vision and image processing
3	Image filtering
4	Colour based image processing
5	Edge detection techniques
6	Morphological image processing
7	Image segmentation
8	Object's detection techniques
9	Video processing
10	Image processing in 3D applications

Distribution of workload for students (contact and independent work hours)

Lectures	**45 hours**
Laboratory work	**15 hours**
Individual students work	**100 hours**
Total:	**160 hours**

Structure of cumulative score and value of its constituent parts

Final written exam (50%), mid-term written exam (17%), and assessments of laboratory (practical) work (33%).

Recommended reference materials

No.	Publication year	Authors of publication and title	Publishing house	Number of copies in		
				University library	*Self-study rooms*	*Other libraries*
Basic materials						
1.	2012	M. Nixon, A. Aguado. Feature Extraction & Image Processing for Computer Vision, Third Edition	Elsevier	unlimited online content, through ScienceDirect	unlimited, electronic book	
2.	2012	J. W. Woods. Multidimensional Signal, Image, and Video Processing and Coding, Second Edition	Elsevier	unlimited online content, through ScienceDirect	unlimited, electronic book	

3.	2008	R. C. Gonzalez, R. E. Woods. Digital Image Processing, Third Edition	Pearson Education		1	
Supplementary materials						
1.	2015	G. B. Garcia, O. D. Suarez, J. L. Espinosa Aranda, J. S. Tercero, I. S. Gracia. Learning Image Processing with OpenCV	Packt Publishing	Electronic		
2.	2009	W. Burger, M. J. Burge. Principles of Digital Image Processing. Fundamental Techniques	Springer	Electronic		

Course programme designed by

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