Technology
Arts Sciences
TH Köln

Course
BV1 - Image Processing

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General information

Long name	Image Processing
Approving CModule	BV1_BaMT
Responsible	Prof. Dr. Jan Salmen Professor Fakultät IME
Level	Bachelor
Semester in the year	summer semester
Duration	Semester
Hours in self-study	60
ECTS	5
Professors	Prof. Dr. Jan Salmen Professor Fakultät IME
Requirements	Basic course mathematics Basic course compuer science Basic course signal theory
Language	German
Separate final exam	Yes

Final exam

Details

In the oral exam, typical problems in image processing are presented, The student should make suggestions conserning suitable algorithms to be applied and to explain typical effects of these algorithms.

Minimum standard

The students must be able to explain the oberation of linear filters and the structue of the spatial frequency spectrum. Moreover, they must be able to recall imortant nonliear filters.

Exam Type

In the oral exam, typical problems in image processing are presented, The student should make suggestions conserning suitable algorithms to be applied and to explain typical effects of these algorithms.

Lecture

Learning goals

Knowledge

Image processing
camera calibration
homogeneous point operations
linear filters
processing in frequency domain
filter banks and wavelets
image compression
adaptive filters
change of sampling grid
change of quantization
morphological filters
color image processing
motion
correspondence analysis
registration

Being able to describe important image processing algorithms, including their algorithmic structure and their effect on images.

Skills

select problem specific image processing methods

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	3
Tutorial (voluntary)	0

Separate exam

none

Practical training

Learning goals

Knowledge

Image processing
camera calibration
homogeneous point operations
linear filters
processing in frequency domain
filter banks and wavelets
image compression
adaptive filters
change of sampling grid
change of quantization
morphological filters
color image processing
motion
correspondence analysis
registration

Image processing with ImageJ
ImageJ
Java
Eclipse

Skills

implement image processing methods
Plugins
Macros

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apply image processing methods using ImageJ

Identify and assess efects of processing in images

Expenditure classroom teaching

Type	Attendance (h/Wk.)

Practical training	2
Tutorial (voluntary)	0

Separate exam

Exam Type

solving exercises within limited functional / methodical scope

Details

process images according to given exercise problems and present results

Minimum standard

All exercises must be processed so far that expected effects of the algorithms become observable.