Course Specifications
Valid as from the academic year 2019-2020

Course

Lecturers in academic year 2019-2020

Philips, Wilfried
TW07
lecturer-in-charge

Goossens, Bart
TW07
co-lecturer

Offered in the following programmes in 2019-2020

Master of Science in Electrical Engineering (main subject Communication and Information Technology )
6 A

Master of Science in Electronics and ICT Engineering Technology (main subject Electronics Engineering)
6 A

Master of Science in Electronics and ICT Engineering Technology (main subject ICT)
6 A

Master of Science in Geomatics and Surveying
6 A

Master of Science in Computer Science
6 A

Master of Science in Computer Science Engineering
6 A

Master of Science in Computer Science Engineering
6 A

Teaching languages

Dutch

Keywords

color, restauration, compression, analysis

Position of the course

This course is an introductory course and presents an overview of image processing techniques and applications, rather than a detailed mathematical description and technical details of the algorithms.

To present an overview of the most important phenomena and techniques in digital image and video processing: image perception, image acquisition and display, image restoration, and primitive operations for image and video analysis. To present some examples of industrial applications of image processing and some important developments in image processing research. To allow the students to experiment with image processing algorithms.

Contents

- Overview: Overview and applications of image processing
- Image perception, representation and reproduction: Image perception by humans, cameras and display systems, Sampling and colour representation
- Image restoration techniques: grey-scale and colour modification, linear filter techniques for noise suppression and edge enhancement, non-linear filter techniques
- Image models: Stochastic image models, Linear image transforms
- Image restauration: Wiener and (pseudo-) inverse filtering, regularisation, Restauration in the wavelet domain
- Primitives for image analysis: Segmentation, Edge detection, Morphological image processing, ...
- Video processing: Video representation, Video restauration
- Applications of computer vision
- Project: Introduction project, Computer project on one or of the course topics

(Asserted)
Initial competences
None required

Final competences
1. Having knowledge of cameras, display systems and image compression standards.
2. Having insight in techniques for image and video restoration, compression and analysis.

Conditions for credit contract
Access to this course unit via a credit contract is determined after successful competences assessment.

Conditions for exam contract
This course unit cannot be taken via an exam contract.

Teaching methods
Lecture, project

Learning materials and price
Electronic multimedia presentation available on the electronic learning platform, course notes (to be ordered during the first class).

References
- The color FAQ. http://www.inforamp.net/~poynton/ColorFAQ.html.
- Frequently asked questions about gamma. http://www.inforamp.net/~poynton/GammaFAQ.html

Course content-related study coaching
ja

Evaluation methods
end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period
Written examination

Examination methods in case of periodic evaluation during the second examination period
Written examination

Examination methods in case of permanent evaluation
Report

Possibilities of retake in case of permanent evaluation
examination during the second examination period is not possible

Extra information on the examination methods
During examination period: written closed-book exam
During semester: graded project reports. Second chance: Not possible
Frequency: one time project

Calculation of the examination mark
Evaluation throughout semester as well as during examination period. Special conditions: The end grade is a weighted average of the grades of the project (1/3) and the exam (2/3), unless the project grade is below 8. In the latter case, the final grade equals minimum(exam grade, project grade-2).