COURSE DESCRIPTION CARD - SYLLABUS

Course name
Image Compression [S1MiKC2>KO]

Course

Field of study
Microelectronics and Digital Communication

Year/Semester
3/5

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

prof. dr hab. inż. Marek Domański
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Lecturers

Prerequisites

Introduction to multimedia: Basic knowledge on multimedia data acquisition, representation and transmission, and perception of image/video. Colors. Stereoscopy. Linear and nonlinear filtering of images. Basics of image/video processing.

Course objective

Gain of basic knowledge on practical standard methods of image and video compression. Gain of skills on the usage of standard compression techniques for image and video.

Course-related learning outcomes

Knowledge:
The student knows the basic methods of image and video compression, including standardized compression standards such as JPEG and HEVC. [K1_W10]

Skills:
The student is able to apply selected methods of image and video compression, analyze their efficiency, and evaluate the quality of the resulting image representation. [K1_U07]

The student can conduct comparative experiments on different image and video compression methods and perform analysis and interpretation of the results. [K1_U19]

Social competences:
The student understands the importance of image and video compression in modern communication and its impact on data transmission, reception quality, and compliance with standards. [K1_K05]
The student is able to work in a team on the analysis and evaluation of various compression techniques and present conclusions in a clear and logical manner. [K1_K03]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Credit in written form. Open, descriptive and calculation questions. Grading scale: <50% - 2.0 (ndst); 50% to 59% - 3.0 (dst); 60% to 69% - 3.5 (dst+) ; 70% to 79% - 4.0 (db); 80% to 89% - 4.5 (db+); 90% to 100% - 5.0 (bdb).

Programme content

Image/video compression - standard methods in common usage.

Course topics

Importance of image/video compression. Standardization in compression. Patents in compression. A common method for image compression - JPEG as the example. A common method for video compression - HEVC as the example. Comparison of various methods and standards.

Teaching methods

Lecture with examples. Laboratory exercises that demonstrate selected topics considered in lectures.

Bibliography

Basic:
M. Domański, Obraz cyfrowy, WKiŁ, Warszawa 2010.
D. Karwowski - Zrozumieć Kompresję Obrazu, 2019.

Additional:
Articles on compression available at IEEE Xplore.

Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00