LINKÖPINGS UNIVERSITET

Image and Audio Compression

Bild- och ljudkompression
6 credits

Programme course

TSBK38

Valid from:

Determined by	Main field of study	
Board of Studies for Computer Science and Media Technology	Electrical Engineering, Media Technology and Engineering	
Date determined	**Course level**	**Progressive specialisation**
2022-08-31	Second cycle	A1X
Revised by	**Disciplinary domain**	
	Technology	
Revision date	**Subject group**	
	Electrical Engineering	
Offered first time	**Offered for the last time**	
Spring semester 2023		
Department	**Replaced by**	
Institutionen för systemteknik		

Specific information

The course can not be included in degree together with TSBK02, TSBK35.

Course offered for

- Master of Science in Media Technology and Engineering
- Master's Programme in Computer Science
- Master of Science in Computer Science and Engineering
- Master of Science in Industrial Engineering and Management - International
- Master of Science in Industrial Engineering and Management
- Master of Science in Information Technology
- Master of Science in Biomedical Engineering
- Master of Science in Applied Physics and Electrical Engineering
- Master of Science in Applied Physics and Electrical Engineering - International

Prerequisites

Probability theory, basic signal processing, basic transform theory.

Intended learning outcomes

The course should give knowledge about methods used for data compression and how these methods are applied to audio, image and video signals. After taking the course, the student is expected to be able to

- Make random models for sources
- Analyze random source models
- Understand source coding methods such as huffman coding and arithmetic coding.
- Understand quantization
- Understand linear predictive coding
- Understand transform coding.
- Understand subband coding.
- Calculate coding performance for different coding methods, given random models for the sources
- Know how different coding methods are used for compression of still images, video and audio data.
- Know what methods are used in different compression standards (GIF, PNG, JPEG, MPEG, mp3, AAC, speech kodning).

Teaching and working methods

The course consists of lectures, lessons and computer lab work. All lectures are available as prerecorded videos.

Examination

| TEN1 | Written exam | 4 credits | U, 3, 4, 5 |
| LAB1 | Laboratory work | 2 credits | U, G |

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

The course is given in VT1 in Norrköping and in VT2 in Linköping, with 4 written exams per year.

About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is "Swedish", the course as a whole could be given in Swedish, or partly in English. Examination language is Swedish, but parts of the examination can be in English.
- If teaching language is "English", the course as a whole is taught in English. Examination language is English.
- If teaching language is "Swedish/English", the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English depending on teaching language.

Other

The course is conducted in a manner where both men's and women's experience and knowledge are made visible and developed.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

The course is campus-based at the location specified for the course, unless otherwise stated under "Teaching and working methods". Please note, in a campus-based course occasional remote sessions could be included.

If special circumstances prevail, the vice-chancellor may in a special decision specify the preconditions for temporary deviations from this course syllabus, and delegate the right to take such decisions.