



The Faculty of:	Electrical and Computer Engineering
Field of study:	Computer Science
Speciality:	
Study degree (BSc, MSc):	BSc

COURSE UNIT DESCRIPTION

Course title:	Multimedia
Lecturer responsible for course: Bogdan Kwolek, PhD, Assoc. Prof.	
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Department : Department of Electrical Engineering and Informatics	

Semester	Weekly load	Type of classes				Number of ECTS credits
		L Lectures	C Theoretical Classes	Lb Laboratory	P Project	
7		15		10		3

Course description
<p>Lecture: Color space: RGB, YSI, YCbCr, YUV. TV standards: PAL, NTSC. Compression: Huffman, quantization, DCT, JPEG, MPEG-2, MPEG4, MPEG-7, H.263/H.264. Image retrieval, multimedia databases, video indexing: image segmentation, video retrieval. Human-Computer-Interaction. People detection, face detection, face recognition, face tracking, head tracking, head pose estimation, human-machine-interaction. Videoconference systems. Face detection in teleconference systems, transmission of voice and video, video repositories. RTP protocol. Technologies of tele-learning, tele-medicine. Technology on-demand, video on-demand. The usage of Windows and its components in multimedia: DirectX, Vfw, MCI. Java Media Framework, Java Advanced Imaging, Java 2D, Java3D, Java Sound.</p>
<p>Classes:</p>
<p>Laboratory: Java Media Framework</p>
<p>Project:</p>

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Objectives of the course

The objective of the Multimedia course is to prepare students to be a part of teams that specify, design, build, implement, manage and use multimedia systems as well to program multimedia applications. To accomplish this objective, students must understand how to use multimedia technology, including hardware, software, and communication, compression as basic components of multimedia systems. This understanding is based on a theoretical grounding as well as on experience working both individually and in teams to program multimedia applications.

Examination method

Test

Bibliography

1. B. Kwolek; Adaptive real-time image processing in human-computer-interaction. In: *Human-Computer Interaction*, I-Tech Vienna, Austria 2008, pg. 150-175.
2. B. Kwolek. Tracking of facial regions using active shape models and adaptive skin color modeling. *Vision Systems. Scene Reconstruction, Pose Estimation and Tracking*, R. Stolkin [ed.], ARS Publication, Vienna, Austria 2007, 331–350.
3. B. Kwolek. A real-time head tracker supporting human computer interaction. In Int. Conf. on Computer Recognition Systems, Advances in Soft Computing, Springer, 2005, pg. 693–700.
4. B. Kwolek. Detail-preserving regularization based removal of impulse noise from highly corrupted images. *Lecture Notes in Computer Science*, vol. 4431, Springer, 2007, pg. II:599–605.
5. B. Kwolek. Face tracking for H.264 encoded video sequences. In IEEE Int. Conf. on Image Processing, IEEE Press, Piscataway, NJ 2005, pg. III:449–452.
6. J. Schmidt, J. Fritsch, and B. Kwolek. Kernel particle filter for real-time 3D body tracking in monocular color images. In IEEE Int. Conf. on Face and Gesture Rec., Southampton, UK, IEEE Computer Society Press, 2006, 567–572.
7. Skarbek W.; Multimedia; Wyd. PWNTZ, 1999.
8. B. Kwolek; Adaptive Real-Time Image Processing for Cognitive Vision Systems. Oficyna Wyd. Politechniki Rzeszowskiej, 2007.

Lecturer signature	
Head of Department signature	
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