Name of the course: Image and Video Processing	Total credits: 2+2+1=5
IPM-18AUTIVPEG	
Type: Obligatory	
Total hours of per semester:	
lecture: 26	
practice: 26	
consultation: 13	
Other: project	
Type of testing: exam	
Other: project	
Semester: 3rd	
Description	
Image filtering, edge and corner detection. Scale-space and affine-invariant descriptors. Image thresholding and segmentation. Matching and correspond RANSAC, robust procedures. Video processing. Optical flow. Motion detection	at image features. Texture adence. Hough Transform, n, tracking and analysis.
Literature	
Compulsory	

- M.Sonka, V.Hlavac, R.Boyle, **Image Processing, Analysis and Machine Vision**, Thomson, 2008. Print ISBN: 978-0-412-45570-4, Online ISBN: 978-1-4899-3216-7
- R.Szeliski, Computer Vision: Algorithms and Applications, Springer, 2011,. ISBN: 978-1-84882-934-3.

Recommended

- E.Trucco, A.Verri, Introductory Techniques for 3-D Computer Vision, Prentice Hall, 1998, ISBN: 978-0132611084.
- Y.Ma, S.Soatto, J.Kosecka, S.S.Sastry, An Invitation to 3-D Vision: From Images to Geometric Models, Springer, 2004. ISBN: 978-0387008936.

Competencies

Knowledge

- Comprehensive and up-to-date knowledge of software technology, including the design, implementation, operation and maintenance of software.
- Comprehensive and up-to-date knowledge of tools and methods for image and video processing. Knowledge of efficient and real-time implementations of techniques for measured data processing. Knowledge of methods and tools for user-oriented processing of analog and digital signals as well as images and videos acquired in various applications.
- Detailed, expert-level knowledge of the technical terms and expressions of computer science in English.

Competencies

- Expertise in the application of the concepts and methods of software technology in modeling of complex software and architecture design. Ability to develop applications with real-time requirements.
- Ability to formalize complex technical problems, to analyze theoretical and practical background, and to provide adequate solutions.
- Expertise in design, development, operation and management tasks in the domain of complex software systems and database management systems.

- Skills for cooperation and team work, and ability to take leading role.
- Skills for written and oral communication in English, using the technical terms and expressions of computer science. Ability to argue, to prepare reports, to read, understand and exploit scientific and technical material (e.g. books and papers).
- Expertise in utilizing sources of technical information, their critical interpretation and evaluation, and the extraction of information relevant to the solution of a specific problem.
- Ability to perform supervised scientific research, and skills required for post-graduate studies.

Attitude

- Follows professional, technological developments related to his/her qualification.
- Committed to critical feedback and self-assessment.
- Committed to lifelong learning and receptivity to new IT competencies.
- Adopts and coordinates the ethical principles of work, organizational culture and research.
- Shares professional knowledge, mediates professional results.
- Adopts environmentally conscious behavior and social responsibility, helping them with IT tools.
- Committed to quality standards and its IT tools.
- Open to initiate collaboration with IT and other specialists.

Autonomy and responsibility

- Takes responsibility for his professional decisions taken during his professional activities.
- Takes responsibility for observing and enforcing deadlines.
- Takes responsibility for own and fellow workers' work.
- In the case of operational critical IT systems, he/she can be assigned responsibility for development and operation, according to his/her professional competencies.