

COURSE DESCRIPTION CARD

Course name	Human recognition by biometric methods				
Course type	optional	Course code	SDPB0061	ECTS credits	2
Forms and number of hours	lecture: 10 h project: 10 h	Scientific discipline	all disciplines		
Course objectives	The purpose of the course is to teach students the popular methods of biometrics, how to recognise people on the basis of their biometrics features.				
Course content	<p>Lecture:</p> <p>1. Review on biometrics in the meaning of biometric image analysis and processing;</p> <p>2. Biometrics errors in the security systems of human identification and verification;</p> <p>3. Biometric errors, their sources and types – such as FAR-False Acceptance Rate and FRR-False Rejection Rate, their graphical representation;</p> <p>4. Special sensors for biometric features acquisition;</p> <p>5. Mathematical and computational methods of image description for human recognition.</p> <p>6. Selected biometrics features for deeper analysis and processing: Eye iris and retina, face, fingerprints, keystroke dynamics, voice signal;</p> <p>7. Biometrics from the Kansei Engineering point of view;</p> <p>8. Biometrics in intelligent house;</p> <p>9. Other applications of biometrics</p> <p>Project:</p> <p>Student will work out some problems or subjects discussed during the lectures and present his research results as a presentation for discussion within the groups.</p>				
Teaching methods	<p>Lecture:</p> <p>Traditional lecture</p> <p>Project:</p> <p>Individual project, discussion</p>				
Assessment method	The evaluation will be based on the submitted project and the activity during the lecture.				
Symbol of learning outcome	Learning outcomes		Reference to the learning outcomes for the field of study for the 8 th level of Polish Qualification Framework (PRK)	Methods of assessing the learning outcomes	
LO1	Has a deep theoretical knowledge in the field of applied computer science in biometrics systems for human recognition		SD_W1, SD_W2	Project, Active participation in classes	
LO2	Knows the methods and tools used in the information systems within the field of image analysis and processing with biometrics and biomedicine applications		SD_W3	Project, Active participation in classes	
LO3	Knows how to obtain the necessary information from the available references and integrating		SD_U1, SD_U2	Project, Active	

	them with the right interpretation and conclusions		participation in classes
L04	Is able to communicate using the specialized terminology in the field of biometrics	SD_U4, SD_U6	Project, Active participation in classes
L05	Knows how to use and apply the Biometrics system theory in practice and nontechnical aspects	SD_U1, SD_U3	Project, Active participation in classes
L06	Can make use of analytic methods, simulation and experimental approaches in biometric image analysis and processing	SD_U1	Project, Active participation in classes

Student workload (in hours)	
Lecture / project	10 / 10
Consultations	10
The unassisted student work	10
Implementation of project tasks and preparation for and participation in exams/tests	10
Total	50
ECTS credits	2

Basic references	1. R. C. Gonzalez, R. E. Woods, Digital Image Processing, Prentice Hall, 2008.
	2. R. S. Choraś, Komputerowa wizja: Metody interpretacji i identyfikacji obiektów. Problemy współczesnej nauki, teoria i zastosowania, Informatyka, Akademicka Oficyna Wydawnicza EXIT, 2005.
	3. W. Kasprzyk, Rozpoznawanie obrazów i sygnałów mowy. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2009.
	4. K. Saeed, Image Analysis for Object Recognition, Białystok University of Technology, Białystok, 2004.
Supplementary references	5. K. Ślot, Wybrane zagadnienia biometrii. WKŁ, Warszawa, 2008.
	6. K. Saeed, T. Nagashima, Biometrics and Kansei Engineering. Springer, NY, 2012.
	7. International Journal of Biometrics. Inderscience, UK, od 2008 r.
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