



UNIVERSITAS GADJAH MADA
Faculty of Mathematics and Natural Sciences
Department of Computer Science and Electronics
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Doctoral Programme of Computer Science

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Website	: http://dcse.fmipa.ugm.ac.id/site/en/computer-science-doctoral-program/				
Module name:	DIGITAL IMAGE PROCESSING				
Module level, if applicable:	DOCTORAL				
Code, if applicable:	MII7245				
Semester(s) in which the module is taught:	I (Odd)				
Person responsible for the module:	Dr. Dyah Aruming Tyas, S.Si.				
Lecturer(s):	Dr. Raden Sumiharto, S.Si., M.Kom. Dr. Dyah Aruming Tyas, S.Si.				
Language:	Indonesian				
Relation to curriculum:	Elective course				
Credit points:	3				
Type of teaching and learning	Class Size	Attendance time (hours per week per semester)	Forms of active participation	Workload	
Teaching, Discussion	3	2.5	Lectures, Discussion	1. Lectures: 3 x 50 = 150 minutes (2.5 hours) x 12 times	30
				2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) x 12 times	36
				3. Private study: 3 x 60 = 180 minutes (3 hours) x 12 times	36
Total Workload	102 Hours				
Requirements according to the examination regulations:	A student must have attended at least 75% of the lectures to sit in the exams.				
Recommended prerequisite	-				
Module objectives/ intended learning outcomes:	Students are able to : CO1: understand the basic concept of digital image segmentation including their types. CO2: able to design and or implement solution to segmentation problem in some case. CO3: able to implement solution to segmentation problem in their research.				

	CO4: able to represent, describe, and interpret digital images.
Content:	<p>This course is designed for discussing the principle and basic concept of image segmentation. In this course, student will apply the theory and concepts of segmentation with their research as a final project.</p> <p>Some aspects that will be discussed in this course:</p> <ol style="list-style-type: none"> 1. Principle and basic concept of image segmentation 2. Image segmentation: pixel based, region based, feature based 3. Morphology image processing 4. Representation and description of digital image 5. Interpretation of digital image.
Study and examination requirements and forms of examination:	Students are evaluated based on final project presentation and report
Media employed:	Face to face meeting, online meeting, power point presentation
Reading List:	<ol style="list-style-type: none"> 1. Rafael C. Gonzalez, Richard E. Woods, Digital Image Processing, 4th Edition, Pearson, 2018. 2. Joshi, Madhuri A, Digital Image Processing: An Algorithmic Approach, Second Edition, PHI, 2018

The Mapping of COs to PLOs

COs	PLOs							
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CO1								
CO2								
CO3								

The PLO of DP-CS

PLO	Knowledge Area	PLO Description
PLO1	[Values and principles]	A graduate should be devoted to God Almighty, uphold the humanity values, internalize academic values and ethics, responsible in working around expertise independently.
Managerial Capability		
PLO2	[Professional attitudes]	A graduate should have good interpersonal skills; able to work together within the organization, both as a leader and a member; able to be the initiator; able to manage and delegate tasks; and have a sense of responsibility for their own work as well as take responsibility for the achievement of the organization's work.
PLO3	[Communication skills]	A graduate should be able to communicate effectively and efficiently with stakeholders from various backgrounds; use

		English well; and able to write and present scientific papers correctly and well.
PLO4	[Life-long learning]	A graduate should be up to date with the state-of-the-art especially in computer science field, able to take parts in the development of computer science field that is engaged in and relate it to other fields throughout life.
Working Capability		
PLO5	[Problem-solving and Scientific skills]	A graduate should be able to analyse science and technology problems in the computer science field, develop alternative solutions through intra disciplinary, interdisciplinary, and trans disciplinary approaches to produce innovative, original, and tested works.
PLO6	[Ability to formulate and do research]	A graduate should be able to formulate research problems through critical, exploratory, and innovative studies both independently and in groups of computer science field that is engaged in and present research results in a scientific paper at regional or international level.
Mastering Knowledge		
PLO7	[Fundamental knowledge]	A graduate should be able to develop knowledge in the field of computer science that is engaged, which includes abstraction, complexity, evolution and philosophy of changes or developments in the field of science.
PLO8	[Applied knowledge]	A graduate should be able to develop theoretical, philosophical, and applied concepts in the field of computer science that is engaged in, and to represent them in a structured and systematic manner.