K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22 (Autonomous College Affiliated to University of Mumbai)

End Semester Exam

Nov - Dec 2021

Program: B. Tech

Examination: LY Semester: VII

Course Code: 1UCEDLC7031 and Course Name: Computer Vision

Duration: 03 Hours Max. Marks: 60

Instructions:

(1) All questions are compulsory.

(2) Draw neat diagrams wherever applicable.

(3) Assume suitable data, if necessary.

		4	Įi.	1,4 1,7	3		Max. Marks	СО	BT level
Q 1	Solv	e any	six q	12	THE				
i)	Expl	ain an	y fou	2	CO6	U			
ii)	Wha	t kind	of pr	2	CO5	U			
iii)	Cons	pute o sider p mage.	oixel		CO2	Ap			
	3 0 2 2	2 4 2 2	4 4 2 1	3 3 0	1q 2 2				
	1p	0	1	0	3				- j-son
iv)	Explain active contour model in brief.						2	CO2	U
v)	What is line localization? Give a few applications of it.						2	CO3	U
vi)	Wha	t is br	ightn	ess co	nstanc	constraint in translational alignment?	2	CO5	U
vii)	Defi	ne sur	face 1	2	CO4	U			

	Write automatic global thresholding algorithm. In which condition i fails?											tion it	2	CO1	U	
Q.2	Sol	ve a	ny f	our	que	stio	ns o	ut o	f six					16	COI	U
i)	Explain how HFR is formulated as a dual generation problem, and tackle it via a novel Dual Variational Generation (DVG-Face) framework.												4	CO6	U	
ii)	Wh foll 1 5 5 1 2	2 2 4 1	are ng ir 4 5 2 3 6	seconage 5 6 7 5 4	2 2 2 1 6	orde non-	er de	eriva ler p	tive	edge s only.	detectors. A	Apply it o	on the	4		
iii)	What is focus measure in depth of focus algorithm. Which edge detectors are used in the computation of the focus measure? If focal length is 50 mm, then find scene depth with sensor locations of 50.25 mm, 51.20 mm and 51.40 mm.											edge	4	COI	Ap	
	leng	gth 1	s 50	mm	, the	en fii	nd so	cene	tatio dep	n of th	ne focus me	easure? If	focal	4	CO5	Ap
iv)	leng	, 51	s 50 .20 r	mm nm a	, the	en fii 51.4	nd so 0 mi	m.	dep	th wit	ne focus me	easure? If	focal	4	CO3	Ap
iv) v)	leng mm	, 51 lain	20 r	mm nm a	, the and :	51.4 regr	nd so 0 mi	on a	dep	th with	he focus me h sensor loc	easure? If	focal		CO3	U
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i)	Explain surface, point and volumetric representations in detail.												8	CO4	U
i)	For a million-scale face recognition problem, explain the steps in cleaning of the largest public face recognition 'WebFace260M' dataset. Also, explain an elaborately designed time-constrained evaluation protocol. Explain and analyze how Face Recognition Under Inference Time conStraint (FRUITS) protocol was constructed to solve this problem.											CO6	U		
iii)	Explain RANSAC algorithm for straight line detection. Analyze and comment on: Which of the two, Hough transform and RANSAC is better in object tracking application and why?													CO3	An
Q.4	Solve any two questions out of three.														
i)	belov	w. (Gene he fi	rate rst el	rem	ainir nt in	g so	even ockw	stru ise d	uctur irect	ing ion b	operation is given elements just by y one pixel. Apply			
	thinning operation on the given image using these structuring elements. Perform only one iteration.														ll.
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ii)	1 1 1 x 1	1 1 1 E Bain	1 1	1 1 1	1 1	1 1	poin	1 1	1 1	recon	astruc	ted from a 2D	8	CO2	Ap