Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014

Subject code: 1724106 **Date: 23-06-2014**

Subject Name: Image Matching and Registration

Time: 02:30 pm - 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Define image registration. Classify various image registration approaches.	**07**
	(b)	Discuss the stereo vision system using block diagram.	**07**
Q.2	**(a)**	Explain the steps for generalized image registration process.	**07**
	(b)	Discuss the Marrôs theory for computer vision.	**07**
		OR	
	(b)	Define and explain the terms: multi-sensor, multi-view, multi-temporal, multi-resolution.	**07**
Q.3	**(a)**	Explain how area based image registration works?	**07**
	(b)	Compare area based and feature base image registration process.	**07**
		OR	
Q.3	**(a)**	Discuss Fourier transform based image registration process.	**07**
	(b)	How the image registration process is evaluated using various performance parameters?	**07**
Q.4	**(a)**	Discuss similarity geometric transformation with necessary mathematical equations. If an image is translated in x-direction by 25 pixels, translated in y direction by 20 pixels and then after rotated by 18 degree. For a pixel with coordinates (30, 40) what will be the new coordinates?	**07**
	(b)	How the projective and affine transform differs?	**07**
		OR	
Q.4	**(a)**	Write a short note on multi-quadratic transformation.	**07**
	(b)	Discuss the comparison of bilinear and interpolation and nearest neighbor re-sampling methods.	**07**
Q.5	**(a)**	Discuss the non-parametric technique for image matching.	**07**
	(b)	Explain any one algorithm for line matching used for image registration.	**07**
		OR	
Q.5	**(a)**	List and discuss the challenges in image registration process for satellite images.	**07**
	(b)	Define and explain chamfer matching.	**07**

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