COMPUTER VISION

TYPE OF COURSE : New | Elective | UG
COURSE DURATION : 12 weeks (29 Jul’19 - 18 Oct’19)
EXAM DATE : 16 Nov 2019

PRE-REQUISITES : Linear Algebra, Vector Calculus, Data Structures and Programming
INTENDED AUDIENCE : Computer Science/ Electronics/ Electrical Engineering

COURSE OUTLINE :
The course will have a comprehensive coverage of theory and computation related to imaging geometry, and scene understanding. It will also provide exposure to clustering, classification and deep learning techniques applied in this area.

ABOUT INSTRUCTOR :
Prof. Jayanta Mukhopadhyay received his B.Tech., M.Tech., and Ph.D. degrees in Electronics and Electrical Communication Engineering from the Indian Institute of Technology (IIT), Kharagpur. He joined the faculty of the Department of Electronics and Electrical Communication Engineering at IIT, Kharagpur in 1990 and later moved to the Department of Computer Science and Engineering where he is presently a Professor. He was a Humboldt Research Fellow at the Technical University of Munich in Germany for one year in 2002. He also has held short term visiting positions at the University of California, Santa Barbara, University of Southern California, and the National University of Singapore. His research interests are in image processing, pattern recognition, computer graphics, multimedia systems and medical informatics. He has published about 250 research papers in journals and conference proceedings in these areas. He received the Young Scientist Award from the Indian National Science Academy in 1992.

COURSE PLAN :
Week 1: Fundamentals of Image Processing
Week 2: 2-D Projective Geometry and Homography
Week 3: Properties of Homography
Week 4: Camera Geometry
Week 5: Stereo Geometry
Week 6: Feature detection and description
Week 7: Feature matching and model fitting
Week 8: Color Processing
Week 9: Range image processing
Week 10: Clustering and classification
Week 11: Dimensionality Reduction and Sparse Representation
Week 12: Deep Neural Architecture and applications