



MEDICAL IMAGE ANALYSIS

PROF. DEBDOOT SHEET

Department of Electrical Engineering
IIT Kharagpur

PRE-REQUISITES : Digital Image Processing

INTENDED AUDIENCE : Interested students

INDUSTRIES APPLICABLE TO : Industries in Medical Imaging, Medical Devices, Medical and Healthcare Softwares viz. GE, Siemens, Philips, Toshiba, Samsung, Microsoft, Google, Zeiss, Robert Bosch, TCS, CDAC, IBM, Boston Scientific, Volcano Corp., Aloka, Rohde & Schwarz.

COURSE OUTLINE :

You get to learn about current technology in processing and analysis of medical images; a rapidly growing industry expected to reach \$3.5 billion by 2020. If you are looking forward to a career in medical imaging instrument and softwares design, medical imaging, medical visualization, medical robotics and augmented reality, this is the key subject you should enroll for. You can use the gained skills in order to develop newer technological innovations and regularize them for high-throughput clinical translation and usage.

ABOUT INSTRUCTOR :

Prof. Debdoot Sheet is an Assistant Professor of Electrical Engineering at the Indian Institute of Technology Kharagpur and founder of SkinCurate Research. He received the MS and PhD degrees in computational medical imaging and machine learning from the Indian Institute of Technology Kharagpur in 2010 and 2014 respectively. He was a DAAD visiting PhD scholar to TU Munich during 2011--12. His research interests include deep learning and domain adaptation, computational medical imaging, image and multidimensional signal processing, surgical analytics and informatics, visualization and augmented reality technology design. He has widely published in journals including Medical Image Analysis (MedIA), and conferences like the IEEE International Symposium on Biomedical Imaging (ISBI). He is a member of IEEE, SPIE, ACM, IUPRAI and BMESI and serves as an Editor of IEEE Pulse since 2014.

COURSE PLAN :

Week 1: Introduction to medical imaging modalities and image analysis softwares.

Week 2: Feature extraction, segmentation, systematic evaluation and validation on datasets.

Week 3: Machine learning based approaches for segmentation and classification.

Week 4: Case studies on some recent advances in analysis of retinal, CT, MRI, ultrasound and histology images