CSCI 6970/ECSE 696x
Image Registration Techniques

Instructor: Charles Stewart
Credits: 3
Max enrollment: 30
CRN: 95928/95962
TF 10:00-11:20

New Course

Image registration is the problem of aligning two or more images, mapping them into the same coordinate system. These images may be acquired using a variety of image modalities, be taken at different times, and occasionally, in medical applications, be of different individuals. This course will introduce students to the image registration problem, discuss a range of solution approaches, and explore use of the CenSSIS and ITK C++ software toolkits. The unifying theme of the course will be solving registration problems by answering three fundamental questions: (a) What intensity information or structure is consistent among the images being registered? (b) What are the geometric relationships between the image coordinate systems? (c) How can the answers to these questions be exploited to solve the registration problem? Advanced techniques in multimodal registration, deformation modeling, and image mosaic formation will be discussed. Applications in medical diagnosis, image-guided intervention, underwater mapping will be explored. Pre-requisites: C++ programming experience, including the use of templates, a course in data structures, and at least one course in image processing, computer graphics or computer vision.

This course is sponsored by the Center for Subsurface Sensing and Imaging Systems.
For more information about the center, visit http://www.ecse.rpi.edu/censsis.
For more information about this course, contact Professor Charles Stewart, AE 107.