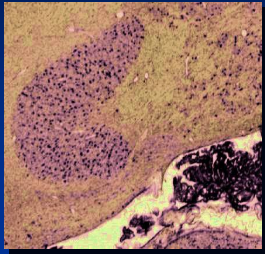


Interactive Registration Techniques for Large-scale Datasets

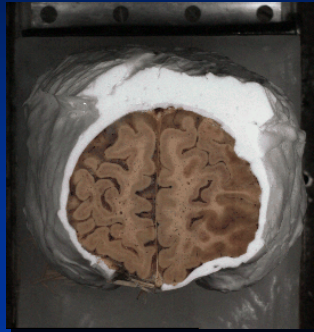
Rustam Sengupta, Electrical Engineering & Computer Science

Faculty Advisor: Dr. Joerg Meyer

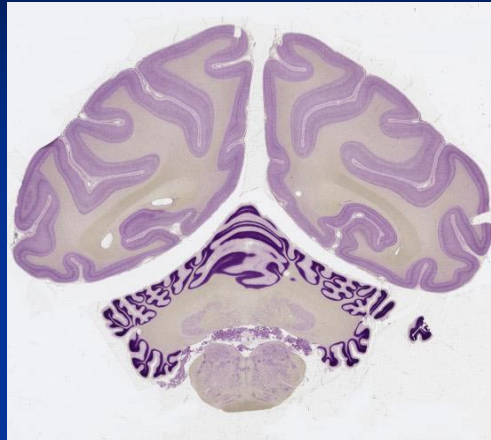
The Henry Samueli School of Engineering, University of California, Irvine



Detailed cellular structure of brain



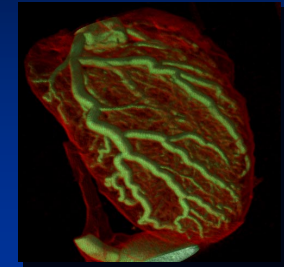
Cryosection of a human brain



A single cryosection of a Rhesus Macaque Monkey brain



Human skull reconstructed from 225 slices by direct volume rendering, using hardware acceleration with 3D texture mapping.



Mouse heart reconstructed from 375 slices.

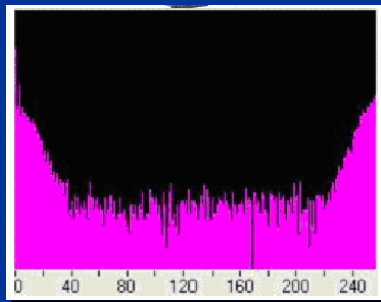
Different Modalities



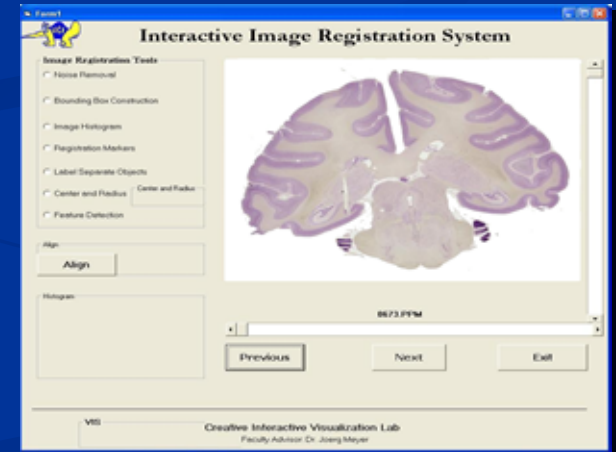
Creating thin sections of frozen tissue in the order of a few microns and then manually mounting the resulting slices on glass plates is a common technique in medical imaging.

Large collections of such manually mounted cryosections are available for digital archiving. The obtained data can also be used to restore the original shape of the specimen, i.e., to create a 3-D model. This task usually requires time-consuming individual alignment of the slices.

Interactive Registration methods help to eliminate this problem.



Histogram equalization of slices to standardize contrast



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