Many experiments in biological research make use of serial sectioning to reveal structure and function. An important reason to use this technique is the fact that 3D imaging devices, such as CT and MRI scanners, do not provide enough resolution or contrast. Another reason is that the research approach might involve staining techniques (coloring), which can only be used on physical sections.

Given the sections, it is a difficult problem to make a 3D reconstruction, due to the distortions introduced by the sectioning method. Sectioning is performed on frozen material in a cryostat, which cuts very thin slices of about 25 micron in thickness and puts them on glass slides. Deformations such as tearing and stretching may occur, which make the reconstruction problem even more difficult. Ju et al. [1] have proposed a method based on pairwise elastic image warps between successive sections to deal with typical distortions that may occur.

**Assignment**

* Implement Ju's method

* Apply it on a given dataset of a mouse brain. The experiment is about the circadian rhythm and the genes involved in it. One mouse brain is cut into 168 sections, and stained for 6 different genes by in-situ hybridization. Staining means that a cell that has a gene of interest activated will be colored in dark blue. The image resolution is approximately 3 micron, yielding a size of about 7000x4000 pixels per section.

* Develop a way to visualize the result, with special focus on showing the regions with high gene expression.