

Public Abstract

First Name:Miao

Middle Name:

Last Name:Zhang

Adviser's First Name:Ye

Adviser's Last Name:Duan

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:SS 2015

Department:Computer Science

Degree:MS

Title:THREE DIMENSIONAL DEFORMABLE IMAGE REGISTRATION AND REGISTRATION VERIFICATION

Deformable image registration (DIR) is a fundamental problem in medical image processing. For example, it looks for correspondent point pairs in two medical data sets of the same patient before and after treatment, and provides guidance to treatment planning. However, there is no ground truth, so very difficult to verify the correctness of the registration. Currently people have been manually picking those point pairs, which can be subjective and not reliable. We propose to use algorithms to look for feature points automatically in three dimensional medical data sets, and also to locate matched pairs automatically between two data sets. Our algorithms were proven to be able to find a lot of those matched pairs that are comparable to human experts. Although a further systematic study is required to fully evaluate our algorithms, we do believe it will be a powerful tool in medical treatment and help reduce the work load of physicians.