Semi-Auto Tumor Segmentation in Application of Cancer Treatment

Abstract

Image segmentation is an important tool in medical diagnosis applications such as segmentation of cancerous cells. Tumor segmentation involves the separation of different tumor tissues. The existence of abnormal tissues may easily be detected most of the time. However, accurate segmentation and characterization of abnormalities are not straightforward. In the past, many researchers in the field of medical imaging have made significant survey in the field of tumor segmentation. This project provides an easy tool for doctors to view volumetric images and be able to segment organs or tumors from any 3D (CT, PET or MR) data.

Moreover, this application is useful to track the tumor or abdominal organs during radiation therapy or gating systems. If the doctors are using other methods to kill the cancerous cells, this application enables them to calculate the new area of the tumor after any treatment such as chemotherapy. Finally, this application enables surgeons to inspect 3D view of tumors cells before surgery, which has significant effect on successful surgery.

Project Objective:

- To provide an application to visualize volumetric 3D data including CT, PET and MR images.
- To develop as application to make provide easy tool to segment ant abdominal organs, or tumor.
- To provide auto segmentation of tumor or abdominal organs from first frame of patient to other frames of same patient in different respiration.

This application is a native application to which is plan to develop in C++. The image segmentation and image registration utilized in this application is from latest research in medical imaging approaches.

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