CAS 741: Problem Statement
Medical Imaging Applications

Ao Dong
400282335

22-09-2019

Table 1: Revision History

Date	Developer(s)	Change
Sep 22	Ao Dong	Initial draft

Problem

Traditionally, when a patient goes through a single time of MRI or CT scan, there usually will be dozens if not hundreds of medical images produced. This fact can cause several problems:

- The radiologists and doctors may have to carefully check every angle and intersection of the big number of images, which is time consuming.
- Human mistakes are more likely to happen while dealing with tremendous data of 2d images representing 3d human body or organs.
- Medical researchers, especially medical students lacking clinical experience, may face the same difficulties of viewing, studying and researching these images.
- Despite the large amount of data, if additional views are needed after the scan is done, the patient may still be called back for re-scanning.

Proposed Solution

To solve the problems, software can be developed to display and analyze medical images. Additionally, although MRI and CT scans may be produced as 2D data set, they can be transformed into 3D through the software, then rendered images can be viewed in 3D.

This kind of software can greatly reduce processing time and increase efficiency. Moreover, the analysis functions and increased cognitive awareness can reduce human mistakes. The software can also rebuild additional views from the original data without calling back the patient.

Context

Environment

The software should be able to run with Windows 10, macOS 10.14, and Ubuntu Linux 18.04. It is also expected to be compatible with other versions of Windows, macOS and Linux, but the compatibility will not be guaranteed nor tested.

Stakeholders

Specific stakeholders include:

- Dr. Spencer Smith
- Dr. Jacques Carette
- Peter Michalski
- Students of CAS741
- Individuals studying or working in fields related to medical imaging