1. Project Context

1.Background

The clients of this project are the staff of the Australian Clinical Dosimetry Service (ACDS).

Staff in the Australian Clinical Dosimetry Service used to review two radiotherapy treatment plans, one is Intensity Modulated Radiation Therapy, another one is Volumetric Modulated Arc Therapy. These two plans are extracted from DICOM files. Since they do not know how to deal with DICOM files, they have to ask clinical centers to process DICOM files and create pdf reports for them to review. And they manually enter useful information into their record Excel spreadsheet they use for recording this data. Then they need to compare the parameters extracted from these two plans to a standard data set to verify whether it is within their specifications. There are about 30 parameters to be verified, which takes much time to finish the verification. If there is an automated program to extract needed parameters from DICOM for them and the program will check the value of the data against their tolerance values and return a “pass” or “fail” result would be helpful for them.

2.Client goals

The goal of this project is to develop a program that can extract useful information from DICOM files and then print all this information in a PDF file. The initial motivation of the project is to provide convenience to the client, which is the staff of the Australian Clinical Dosimetry Service who need to manually enter the information they need into their record Excel spreadsheets.

Manually extracting information is really time-consuming. Therefore, what they need this kind of program. Ideally, the output from this program will check the value of the data against the tolerance value and return as a ‘pass’ or ‘fail’ result. Since their staff has some basic coding experience with MatLab and Python, the technique used to develop this program should be Python or MatLab (or a combination of both). Even though there are many parameters to be extracted and checked, the basic goal of the clients is to extract one parameter and prints it out in a pdf. Therefore, the clients can work from the base code to continue with development. If the project finished and runs well, it will save many times on manually extracting and validating the parameters. After doing some research, there are various third-party libraries about medical image processing.

The goals will be completely finished by the end of the semester. The team may start from the basic knowledge about the DICOM file and try to understand the meaning of required parameters in the first 2 weeks. The exaction and validation will be finished separately in sprint1 and sprint2.

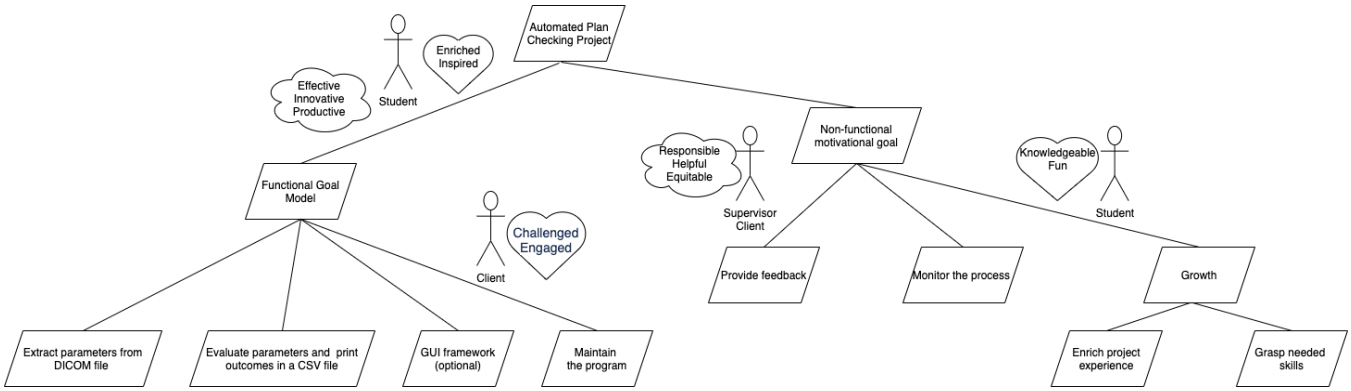
3.Business Case

- Save time: Instead of entering all parameters into a pdf file manually, this program can save ACDS staff much time
- Save costs through efficiencies: Improve the efficiency of ACDS staff. The program can extract parameters faster and accurately.

4.Motivation Model

we construct a motivational model as below.

who	do	be	feel
Students	• Develop this program • Grasp needed skills • Enrich experience	Effective, Innovative, Productive	Enriched, Inspired
Client	• Provide their requirements for this program • Provide their feedback to the product developed • Maintain the program	Equitable, Responsible	Challenged
Supervisor	• Provide industry experience • Monitor the process of this project • Provide advice and feedback	Responsible, Helpful	Engaged


Automated Plan Checking Project
Enriched Inspired
Student
Effective Innovative Productive
Functional Goal Model
Challenged Engaged
Client
Responsible Helpful Equitable
Supervisor Client
Non-functional motivational goal
Knowledgeable Fun
Student
Provide feedback
Monitor the process
Growth
Extract parameters from DICOM file
Evaluate parameters and print outcomes in a CSV file
GUI framework (optional)
Maintain the program
Enrich project experience
Grasp needed skills