

## Team Meeting

23 March 2023/ 3:00 PM / Zoom

## Attendees

Andrew, Raymond, Lida, Rohit, Nofaldi, Reena, Tony, Kaylee

## Agenda

### Introduction of the team members ---- 5mins

1. Runyu Yang (Kaylee)
2. Rohit Baney (Rohit)
3. Yufeng Xie (Tony)
4. Nofaldi
5. Lida (supervisor)
6. Zirui Shan (Reena)

### Ask for industry partners' General understanding of this project ---- 10mins

- **Aim:** The secondary audit dose data from the different treatment machines used to calculate the dose delivered and the different software used to calculate the dose were analysed and compared with the planned dose data provided by the hospital, looking for trends in the data and differences.
- **Variables affecting the results:**
  1. Dose-measuring therapy machines (Two major radiotherapy equipment manufacturers)
  2. Different planned dosing systems (Approx. 6-7 different systems and with different suppliers)
  3. Radiation provided by the treatment machine at different energies (A decrease in the energy of the X-rays reduces the stimulation and vice versa.)
- **The model used:** A prediction model
- **Data Type:** The manufacturers and software suppliers are anonymised (in string form), and the rest of the data is numeric.
- **Result:** Look for correlations in the data or correlations between different attributes and how accurate they are and then compare them to the data provided by the audit, where less discrepancies are better.

### Understanding of Data ---- 40mins

- Manufacture stands for the machine manufacturer, Model for the different machines and TPS for the different calculation software. **The data after the AN column in the excel sheet are numeric data** and correspond to different labels, where the difference between the planned dose and the measured dose is compared.
- The size of the dose difference is related to the three labels given by the audit, **OT meaning out of tolerance, O meaning optimal and A meaning action. Thus, optimal is the best level, action is a medium level and out-of-tolerance is the worst level.** For radiotherapy

treatment, the doctor **prescribing the dose expects at least 5% consistency**. But audits also have measurement uncertainty, and measurement uncertainty can affect variation.

- There are **six energy levels**, four purely numeric energy levels and **two other levels with FFF**, which represent the different energies output by the device lock, subsequent processing can be done by making the FFF a separate boolean variable. For the purely numeric energy levels, the higher the number the higher the energy level.
- The data after the **AO column**, e.g. the first row of the AO, PxVar, can be seen as a prescription point, representing the dose change, which is a **2D metrics**, by applying different scenarios and then getting the maximum change data, the worst positive point and the worst negative point are recorded in this table. The different colours distinguish the different areas and are of **equal importance for prescription and Worst Point**.
- **Hypothesis: There are no strong trends relating to equipment manufacturers.**

### Next Meeting Schedule ---- 5min

Once a week, next meeting time confirmation by Dr. Rashidi

### Action Items

Meeting closed at 4 PM

### Next meeting Agenda