

WEB-BASED IMAGE BIOMARKERS MANAGER

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Summary

Fullstack web project to manage Quantitative Image Biomarker (QIB) collections.

Introduction

- In current radiomics projects, QIB collections are extracted and stored as CSV files.
- Managing these files is tedious and it is a challenge in radiomics to efficiently store and retrieve them for machine learning.
- This project aims to address this problem by storing QIB collections using a relational data model.

Methods

The project consists of three components:

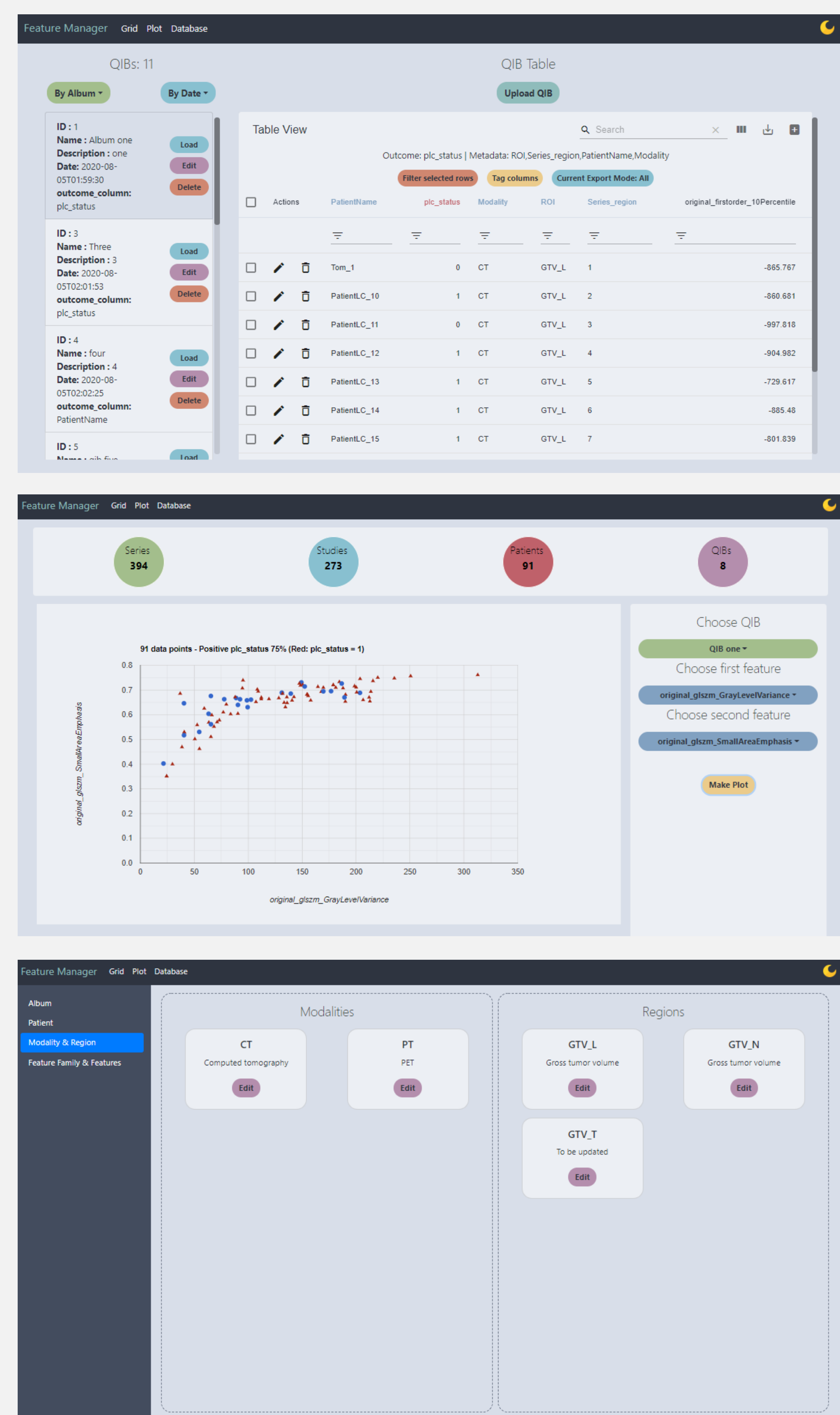
- **MySQL relational database** to store QIB collections
- **Flask back-end application** to perform ETL process on CSV files and provide a RESTful API.
- **React front-end application** to consume the API.

ETL process: Each cell in QIB collections is treated as a data tuple, allowing for an accurate rebuild of stored data back to table form in the front-end application.

Results

Web application to manage QIB collection where users can:

- Upload QIB collections
- View and export stored QIB collections as tables
- Pick columns and rows in QIB table to save as custom QIB collections
- Filter for QIB collections based on their metadata
- Perform CRUD operations on certain metadata entities
- Visualize QIB collections as scatter plots



Conclusions

- It is possible and efficient to store QIB collections using a relational data model
- It comes with the cost of enforcing a very rigid column format in the CSV files