Design Document

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1 Design Considerations

1.1 Assumptions

- This is a SMART-on-FHIR web application that supports multiple users.
- For the same user, this app is not persistent between different runs.
- User is well versed in English and know how to play with this app.

1.2 Constraints

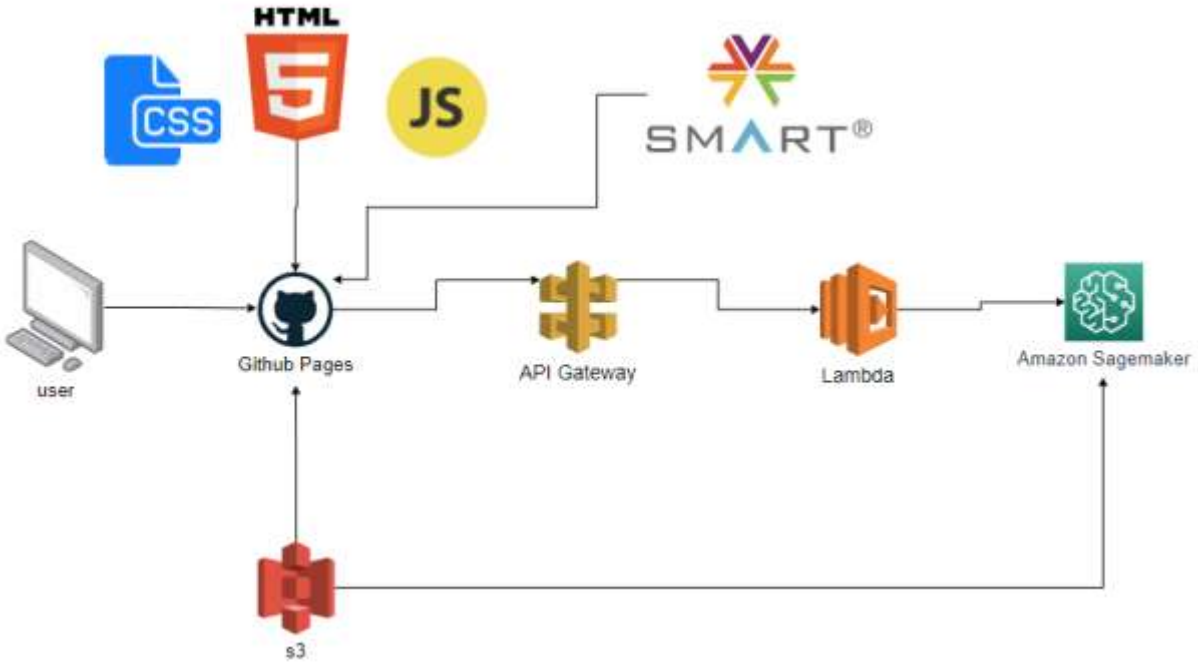
- As this application supports multiple users, scalability related to system and data loading needs to be considered.

1.3 System Environment

- This SMART-on-FHIR app only supports FHIR version R4.

2 Architectural Design

The web application component of this project will leverage GitHub Pages to host its static contents. The user interface will be built with HTML, JavaScript, and CSS to allow users to upload PNG files. Amazon Simple Storage Service (S3) will be used to store these chest x-ray images. Amazon SageMaker, along with Amazon API Gateway and Amazon Lambda, will be used to train the machine learning model (CNN), provide a POST API to the web application, and allow for the capability to pass chest x-ray images as input to the ML model. The SMART-on-FHIR application from Lab 3-2 of the course will be leveraged as a starting point to display a dashboard for the user.



3 User Interface Design

Below is an example of the user interface (UI) design showing the ability to upload an X-ray image, display the result of the diagnosis/prediction, and take an optional annotation as needed. Besides chest disease detection function, the UI also displays patient demographic info at the banner, key observations such as height and weight, and the list of medication requests.