A Serverless AI-Powered Web App for Detecting Medical Conditions in CT Scans

Description:

In March 2020, the World Health Organization declared COVID-19 as a global pandemic. As the seriousness of the situation loomed, health care systems around the world struggled to respond to this unprecedented situation.

In this tense situation, several organizations (including research facilities, universities, and commercial companies) started looking for ways to support doctors' efforts to respond efficiently and quickly.

Scenario:

ABC corp created a serverless artificial intelligence-powered solution to help detect manifestations of COVID-19 (and other medical conditions) in CT scans.

ABC corp developed CT Detect, a web-based app that allows users to submit CT scan studies for artificial intelligence (AI) model analysis.

By design, the CT Detect app is simple to use with only a handful of features. Their AI-powered app allows users to search and organize, with statistical metrics and charts available to all users.
Accessing the app requires a multi-step process involving a strict workflow and multiple actors.
By default, two-factor authentication (2FA) is enabled for each profile and must be configured by the user during the initial login. Other security measures, such as a unique URL per customer (medical facility), are also present.

This array of features ensures CTdetect is both secure and privacy-oriented.

Challenge:

Privacy is the main challenge when it comes to software solutions in a medical context. Legal restrictions, and the sensitive nature of the data involved, create limitations for the software architect to consider and eventually solve.

An essential part of an AI-powered solution is the model's ability to function with a high confidence level. For an effective AI-powered solution, the existence of relevant and correctly annotated training datasets is imperative.

Finally, any software solution that's to be used by the medical community in time-sensitive tasks or emergency-like environments should be easy to use, quick, and reliable.

Reference Solution Architecture: