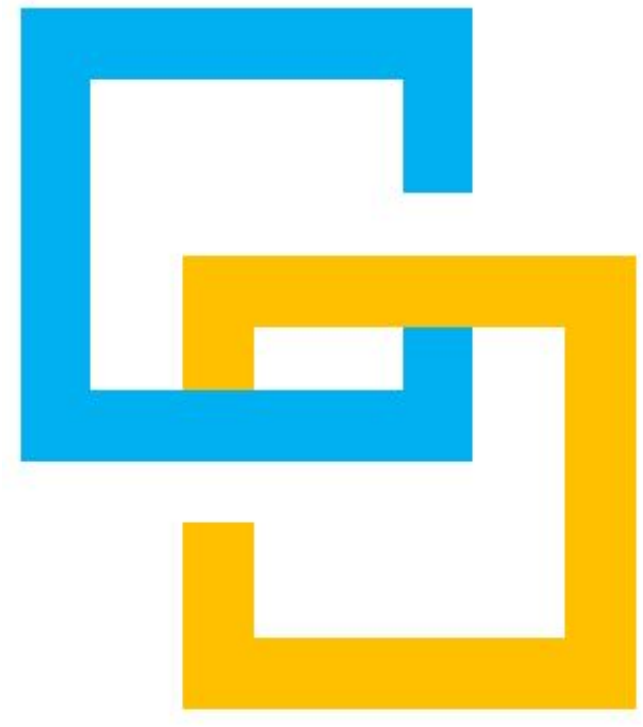# Globetrotting Guru (GG) - A Recommender System for Tourism Businesses

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Motivation and Objective

Globetrotting Guru (GG), a Software-as-a-Service (SaaS) web application aims to connect tourism businesses impacted by COVID-19 to customers in their host communities i.e. Singapore. As the Singaporean tourism industry seeks to reopen their businesses to a post-COVID audience, GG aims to provide a platform that makes information about local places of interest available online, and more importantly make this information more usable, succinct, searchable, reliable, and above all, personalized.

GG aims to provide personalized recommendations to users on ongoing tourism events and promotions based on a unique recommendation algorithm and our handmade AI driven prediction model. The information offered is not only more likely to match user's interest but also most affordable to them.
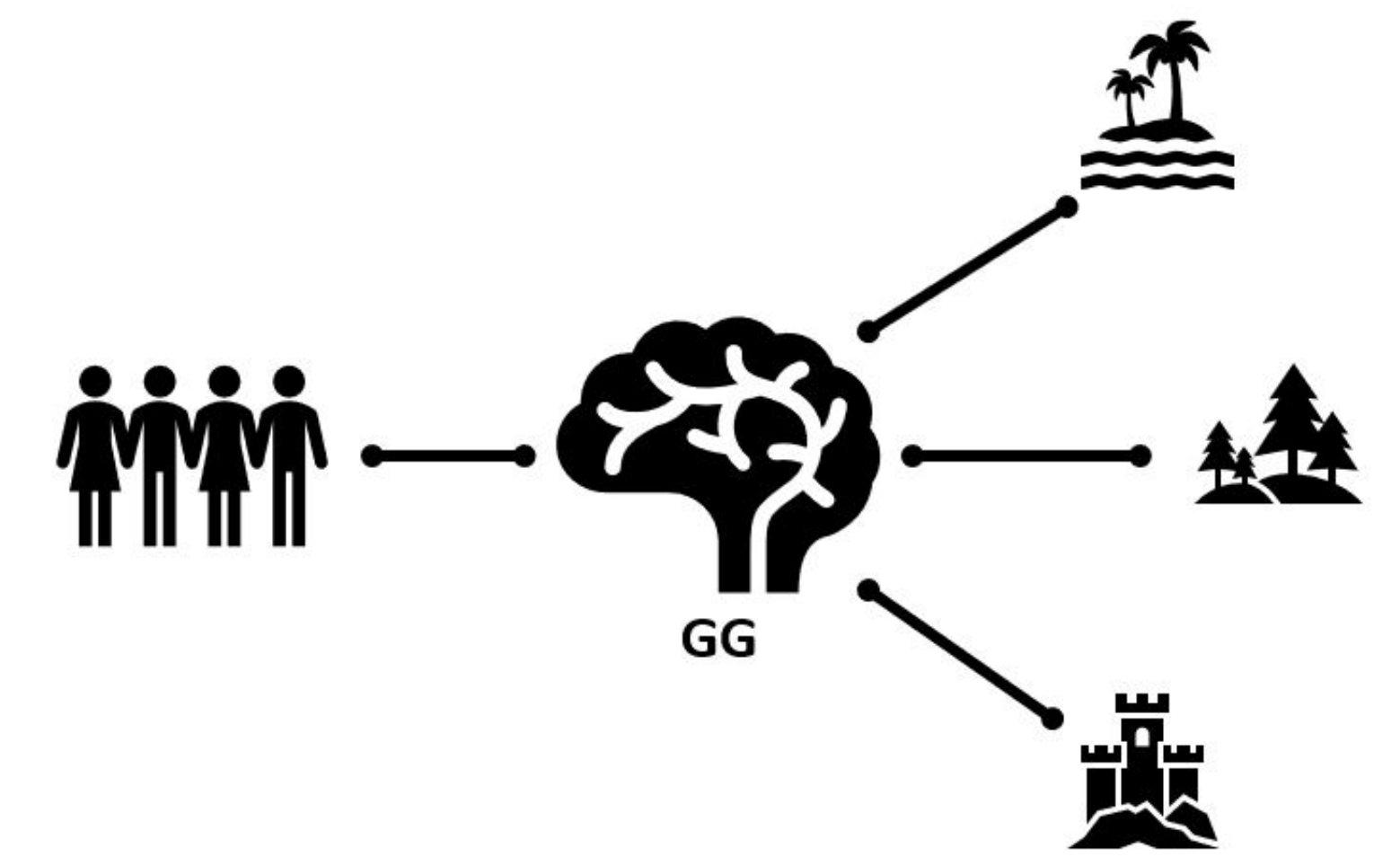

Figure 1. GG connects users with tourism sites

Approach

We have conceived of two platform and technology agnostic designs, which are illustrated in Figure 2 and Figure 3. In Figure 2, the workflow is for requesting and returning recommendations. In between, the system obtain information from external website for information like traffic and weather. It also reads information from data available in the storage system. The core part is the unique recommendation algorithm which analyze and integrate all the known information and provide users with tourism recommendations.
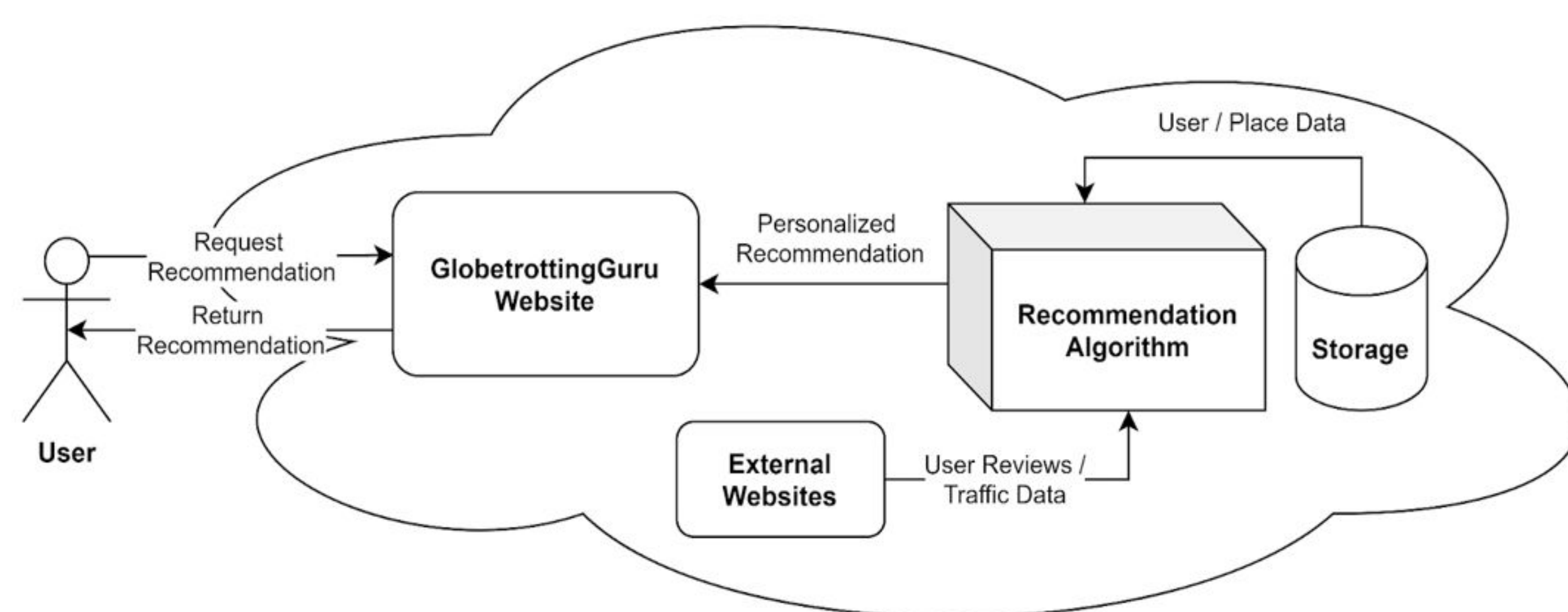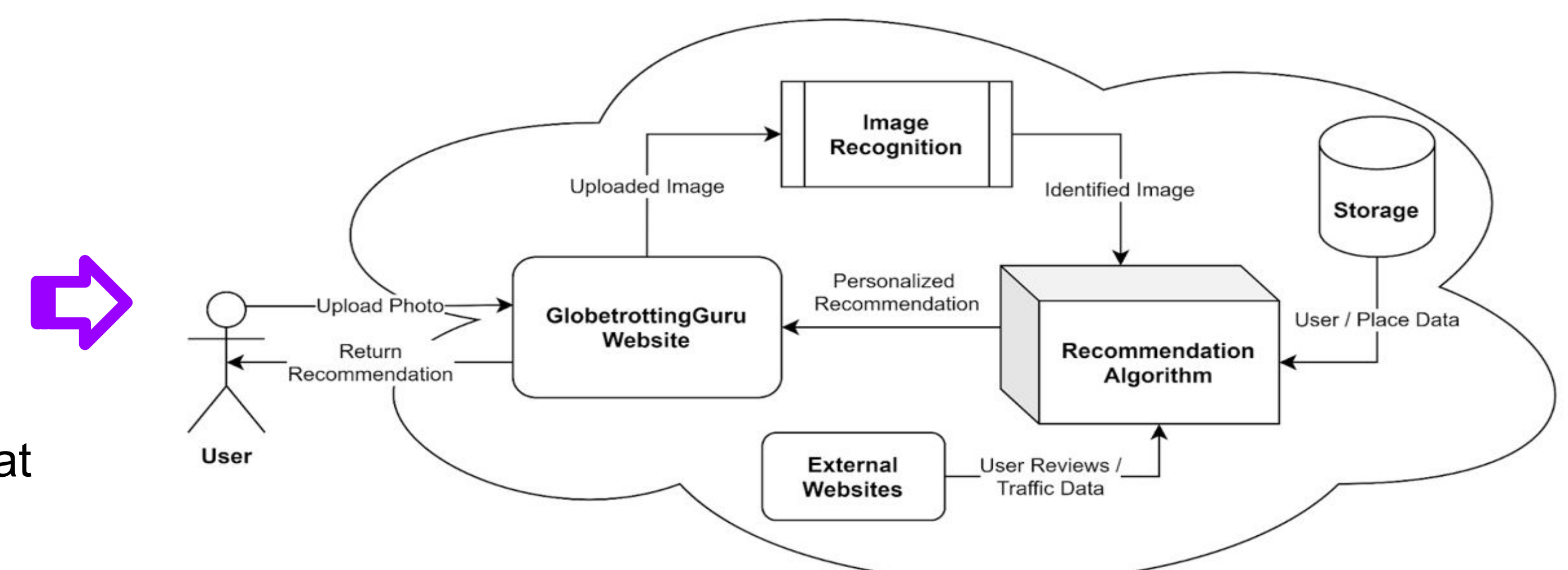

Figure 2. User Flow for Obtaining Normal Recommendation

In Figure 3, a similar workflow is involved. The key difference from the previous one is that users uploads images of places they like and the system will make use of these images based on popular image recognition algorithms

Figure 3. User Flow for Obtaining Recommendation with Image Upload

Implementation

Core components

- A Web Server that hosts and delivers static content to users.
- A main backend Application Server that responds to API REST calls over HTTP from the client whenever there is a need to execute business logic e.g. authenticating the user after the user tries to login from the website.
- A Database to hold user and place information which are then used to store preferences and generate recommendations. Given the anticipated scale, GG will adopt a non-relational database.

Auxiliary components

- A Content Delivery Network that serves static content for GG to improve the speed at which our users can access the website.
- An Object Store that temporarily holds uploaded photos from our users so that they can be processed using our Machine Learning pipeline to identify and tag the photos.
- A separate AI Application Server whose main responsibility would be fetching photos uploaded to our object store, and interacting with our inhouse Machine Learning Model to identify and tag them. The decision to separate AI processing into a separate server stems from the different scaling requirements that the AI processing server would have, compared with our main backend server.
- Although these are not currently implemented, we will be calling External APIs to supplement the recommendations generated by our backend with details such as user reviews and carpark data in realtime.

Deployment

AWS will be used for deploying our SaaS product. Figure 4 illustrates various components and how they are deployed.
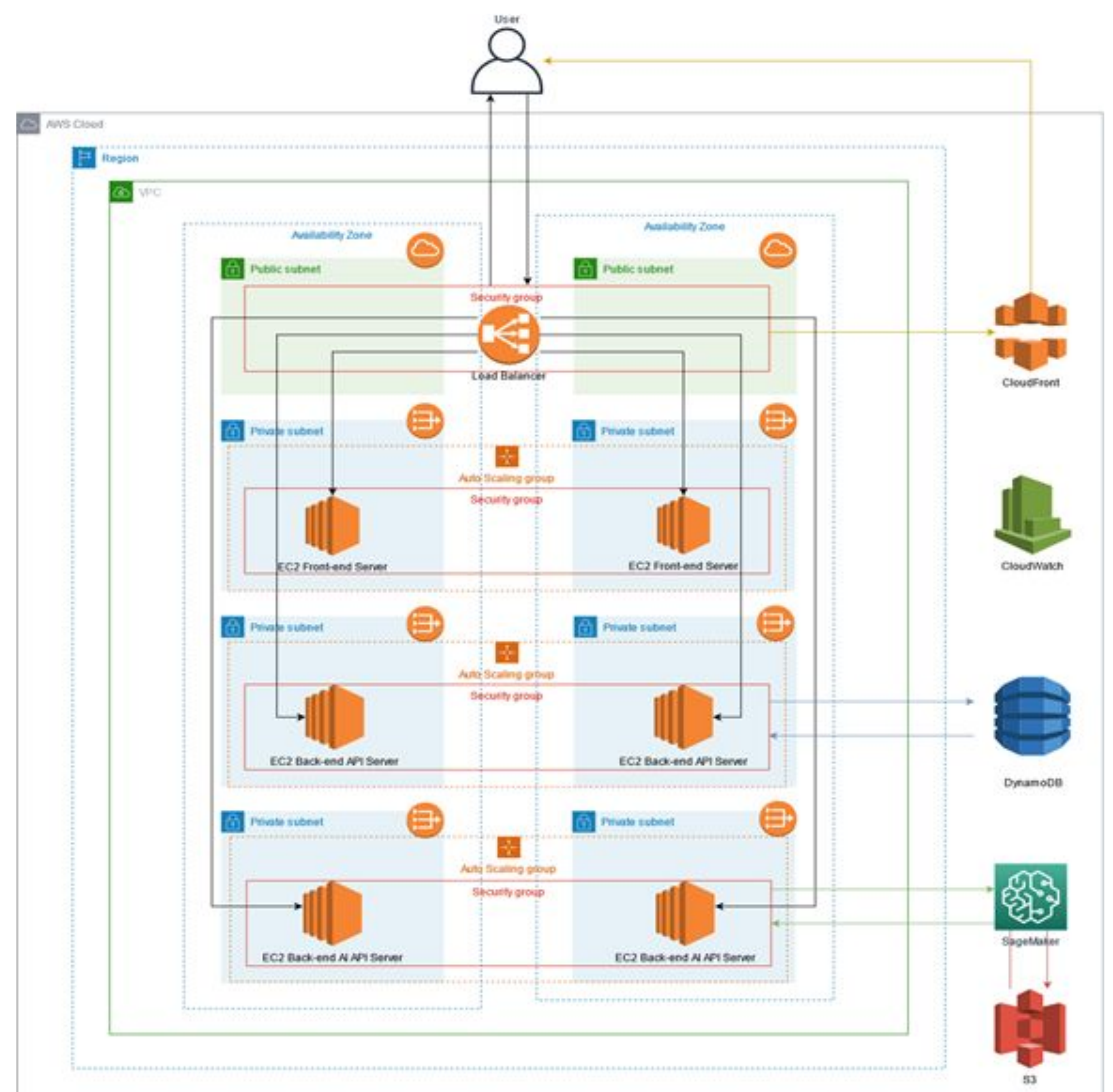

Figure 4. Cloud Architectural Diagram for GG Implementation

Revenue Model

Two phases

- Pilot Phase: in this phase, we target 100 users which brings us $330 - $1050 revenue monthly. We will also try to secure partnerships and campaign deals with local businesses.
- Expansionary Phase: after the initial launch, we target 5000 users to use our system after GG acquires sufficient traction. We aim to achieve $14500 - $33500 revenue monthly.

Pricing model

- A flat fee of 3-5 cents for each recommendation made for a partner-offering that has been viewed by a customer
- A 10% commission for a successful purchase of the recommendation
- A campaign fee (priced on a case-by-case basis) for business partners who want to display direct advertisements for their products outside of the recommendation system
- A rebate in the form of SingapoRediscovers credits by STB for every one thousand redemptions that goes towards supporting GG's internal promo codes