PROOF-OF-CONCEPT

ELG 5100 Group 5

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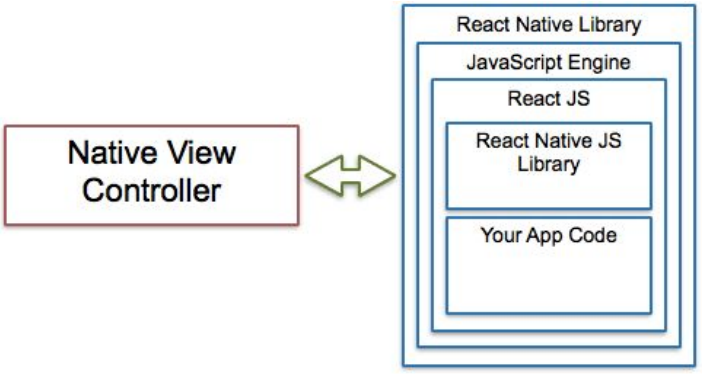
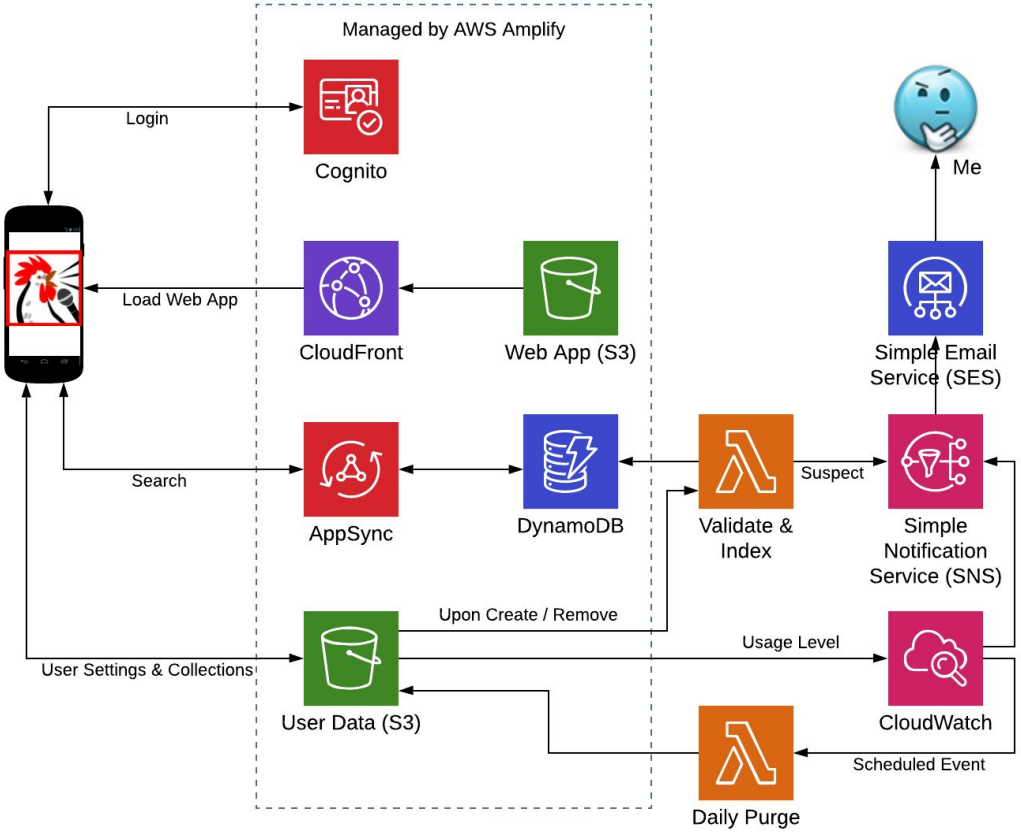
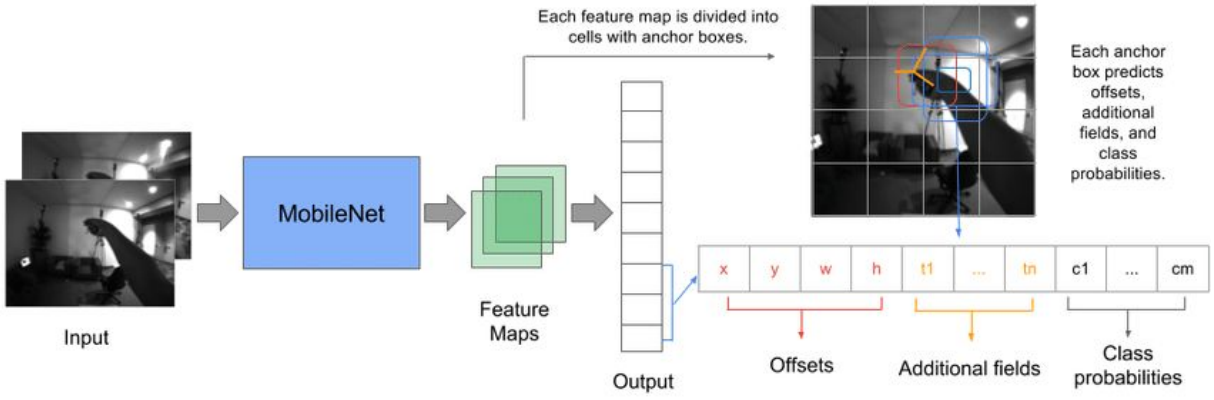
In our project, we use react native to build our front-end part. React Native is an open-source mobile application framework created by Facebook, which is used to develop applications for Android, iOS, Web and UWP by enabling developers to use React along with native platform capabilities. React Native runs in a background process directly on the end-device and communicates with the native platform via a serialisation, asynchronous and batched Bridge. React components wrap existing native code and interact with native APIs via React's declarative UI paradigm and JavaScript. The architecture of react native is shown below:



Because Mobile applications require cloud services for actions that can't be done directly on the device, such as offline data synchronization, storage, or data sharing across multiple users, we use AWS Amplify to build our back-end, which provisions and manages backends for mobile applications and provides a simple framework to easily integrate backend with React Native frontends.



Finally, We build and train our model using jupyter notebook, which is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text. The framework we use in our project is TensorFlow Object Detection API, which is an open source framework built on top of TensorFlow that makes it easy to construct, train and deploy object detection models. Because we want to achieve high accuracy, we need a large dataset of food images. And Food 101 is a good collection of food images which we can use for this project. Training a model from beginning to end with our dataset can take a long time (weeks) and a high-end GPU. Instead, we use a pre-trained model and retrain it with our dataset to replace the classes in that model with our classes. For this project, we chose Mobileset SSD as the base model, which offer high speed and are ideal for detection on video feeds.



And this is the result we get using our trained model: