

# WZDM SmileKnect

## Orthodontic Monitoring App

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### Abstract

The goal of this project is to create an app which would circumvent the need for patients to participate in routine checkups. Our solution is an app which will allow patients to take pictures of their teeth and then have those pictures analyzed by our machine learning algorithm to evaluate the position of their teeth. The app also features an orthodontist view which will show a verified orthodontist their patients and the teeth images the patients have taken. By doing this it would allow patients as well as doctors to save on time and money by not having to perform unnecessary checkups and only intervene when help is directly needed.

**Keywords:** Android, iOS, Flutter, TensorFlow, Machine Learning, App

### Impact

By eliminating routine checkup, a significant amount of physical resources is saved in terms of fuel or energy needed to transport people from the orthodontist's office to their homes and back regularly. This also saves the patient money, no longer needing to pay for checkups that offer little to no material medical advantage.

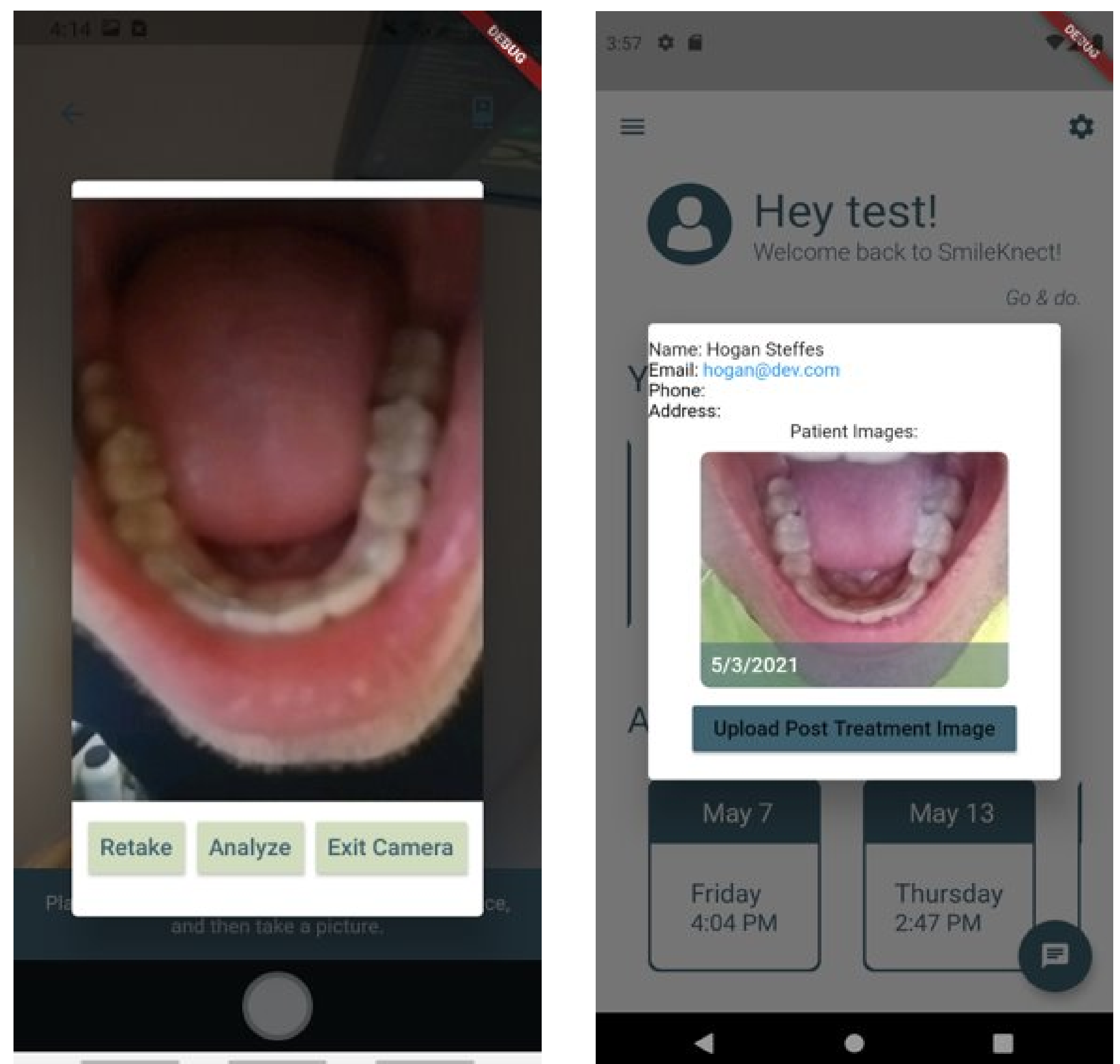
### Performance

UNet was able to successfully generate the image masks with an acceptable level of accuracy, generating masks which highlighted where the teeth were for the image view we desired.

### Architecture



### Results



### Summary

We were able to create the orthodontist view and UI interface for patients to create their profile and be able to submit a picture of their teeth which can be analyzed against their original teeth structure and shared with the doctor. A TensorFlow algorithm for measuring the movement of teeth was also created and will be improved in the future. This project is useful because it reduces the need for patients to physically travel to orthodontic offices for teeth checkups. This will not only reduce the amount of work for the patient and doctor, but it is a pandemic friendly solution to make sure people are getting the dental care they need. Moreover, both doctors and patients can access their relevant data in one unified place and in real time. This allows both to be proficient in their endeavors and it will be easier to track patient progress regarding teeth alignment. Such an app can be used globally by any dental practice.