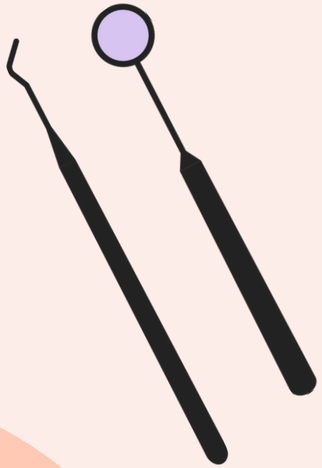
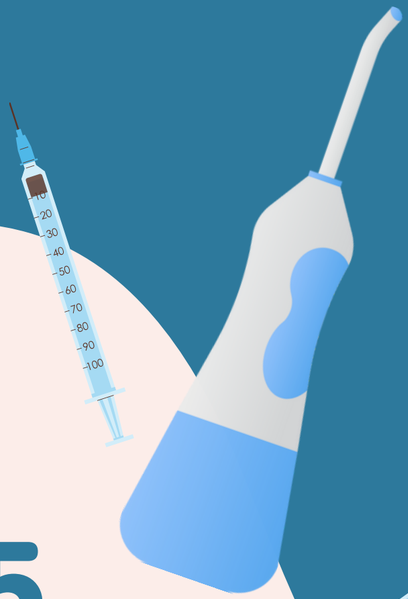




DETECTING DENTAL DISEASES USING YOLO V5

Ashik Sanyo - 2248404

MDS - B

AGENDA

- Defining the Problem statement
- Approach
- Quick Introduction
- Data Collection & Training the model
- Result
- Feedback by Dental Surgeon
- Overview of end product
- Conclusion

PROBLEM STATEMENT:

- Our project focuses on implementing a YOLOv5 model for the automated detection of dental diseases and conditions in diagnostic imaging.

- The model aims to improve the efficiency and accuracy of dental healthcare by identifying various dental issues in images, ultimately enhancing patient care.

- This is especially important as currently available tools and software for dental disease detection are often highly expensive, making them less accessible and cost-effective for healthcare providers and patients.

SMILESCAN AI

SmileScan AI is a AI state-of-the-art dental disease detection system leveraging YOLOv5 deep learning technology.

Our goal is to provide dental professionals with a powerful & faster diagnostic tool, enhancing patient care through efficient and precise disease detection.

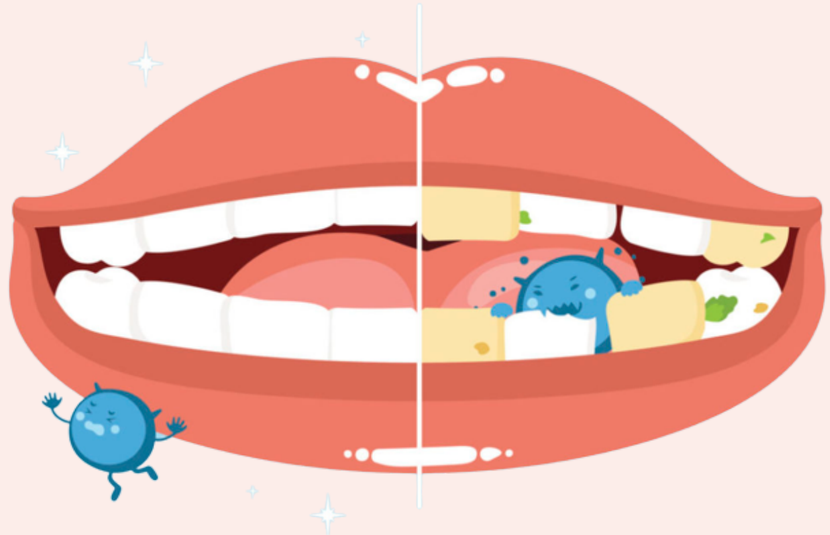
WHAT ARE DENTAL DISEASES?

Dental diseases, also known as oral diseases or oral health conditions, are medical conditions that affect the teeth, gums, and other structures in the mouth. These diseases can range from common issues like cavities and gum disease to more severe conditions.

WHAT ARE THE DIFFERENT TYPES OF DENTAL DISEASES?

DIFFERENT TYPES OF DENTAL DISEASES

- Root canal Obturatien
- Apical abcsess
- Implants
- Crown
- Caries
- Amalgam filling
- Prefabricated post
- Residual root
- Composite filling



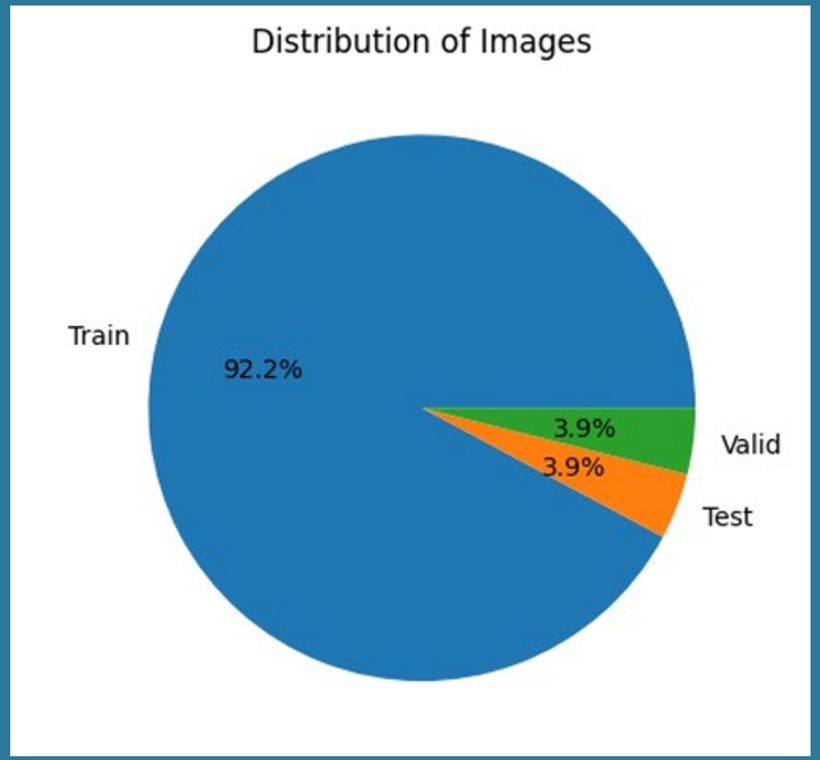
APPROACH

Building a Deep learning model to classify the dental diseases from a dental radiograph (Panoramic X-Ray)

DATA COLLECTION

Data is collecting using Roboflow API

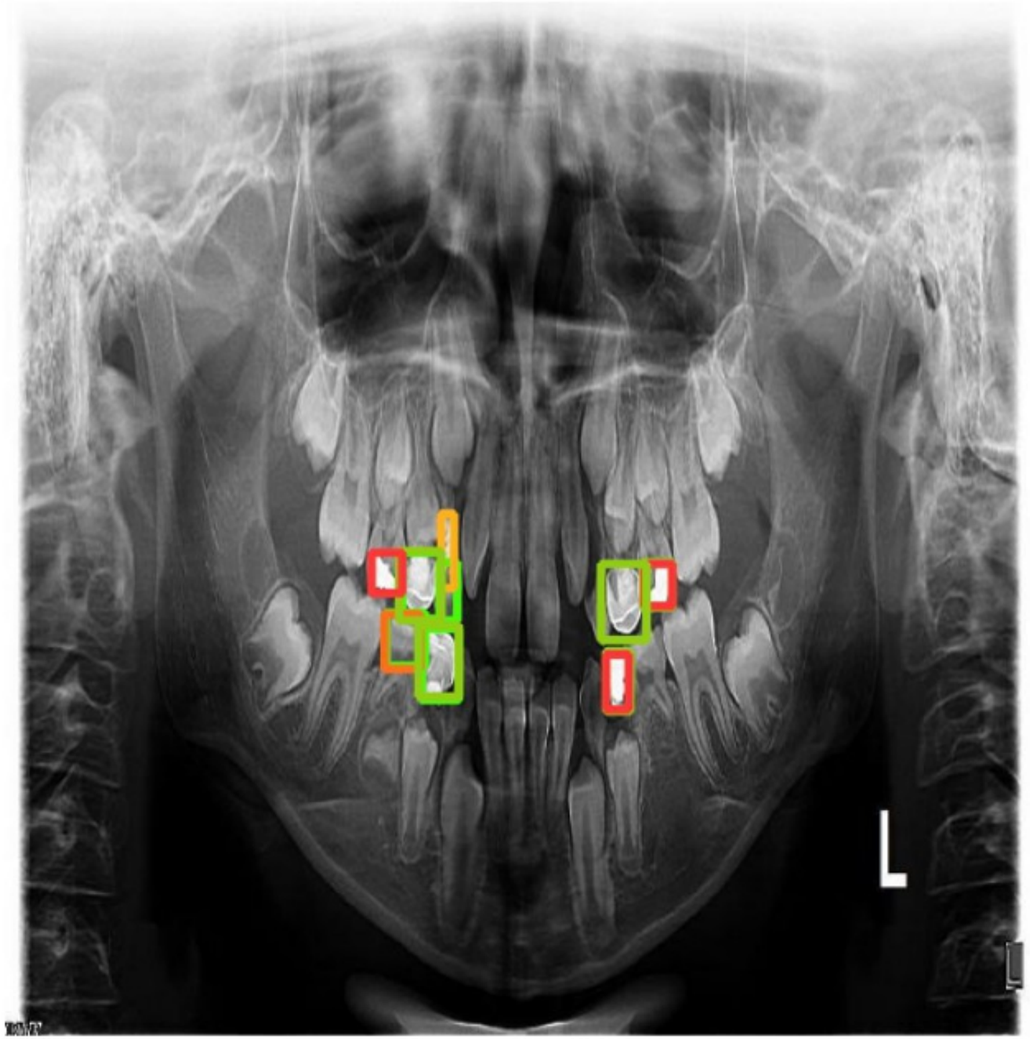
```
!pip install roboflow

from roboflow import Roboflow
rf = Roboflow(api_key=" Your API Key Here ")
project = rf.workspace("bahadr-tatar").project("dentalai-i4clz")
dataset = project.version(1).download("yolov5-obb")
```



YOLO V5 FOR DETECTION

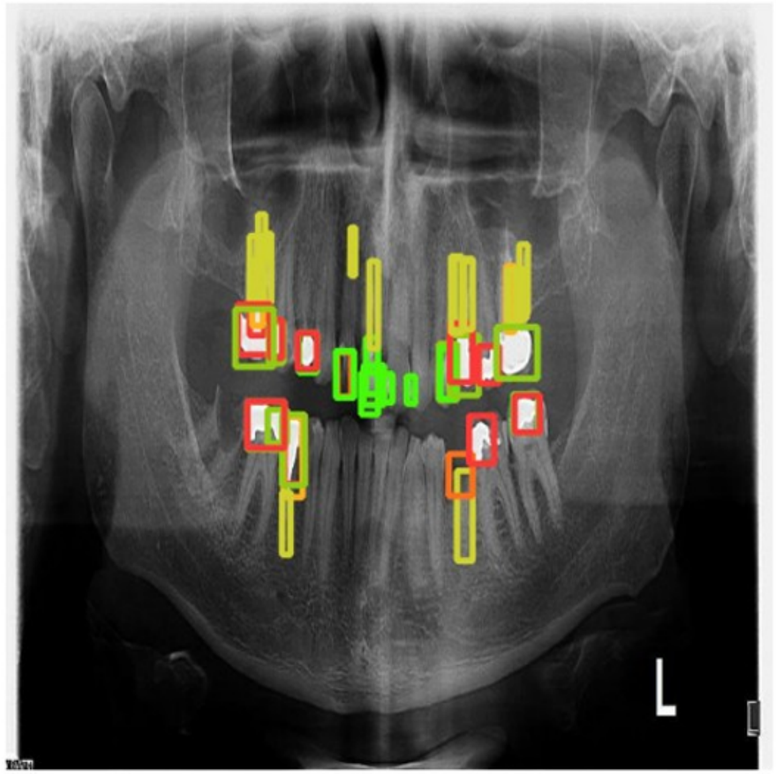
YOLO (You Only Look Once) is a popular computer vision algorithm and deep learning model used for real-time object detection and recognition in images and videos. YOLOv5 (You Only Look Once)version 5 is one of the iterations of this algorithm, designed to be faster, more accurate, and efficient compared to its predecessors.

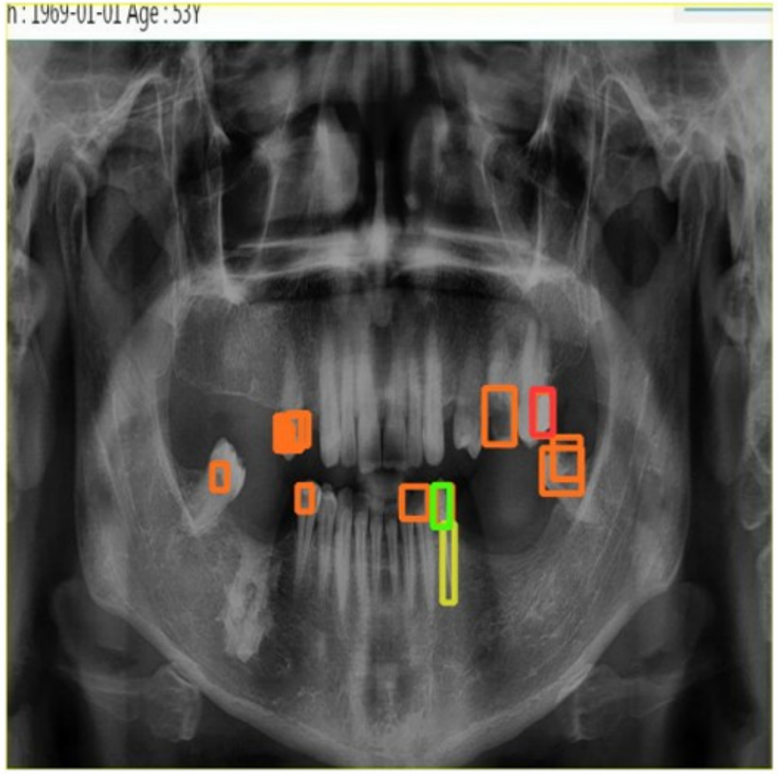
RESULTS

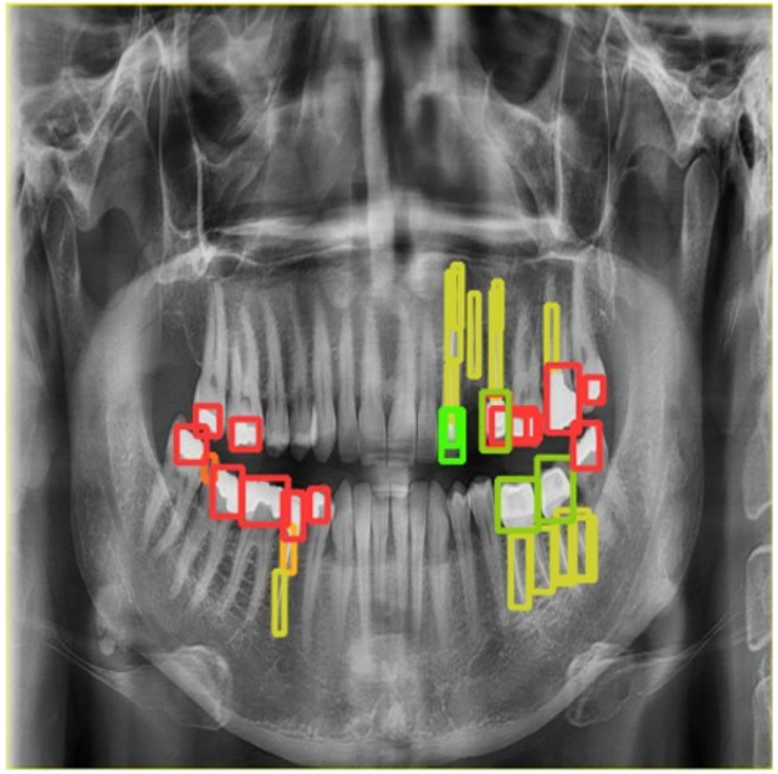


- Root canal Obturatien
- Apical abcsess
- Implants
- Crown
- Caries
- Amalgam filling
- Preferbricated post
- residual root
- Composite filling

RESULTS

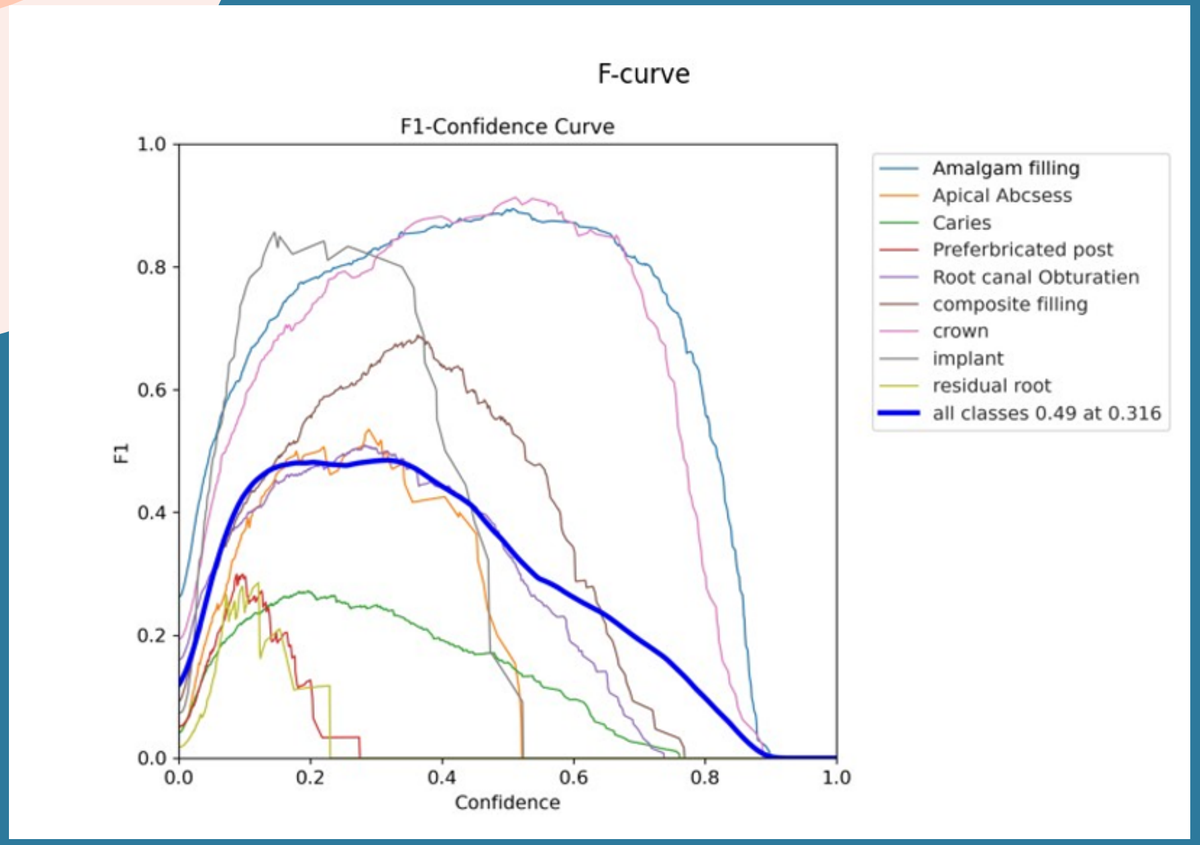


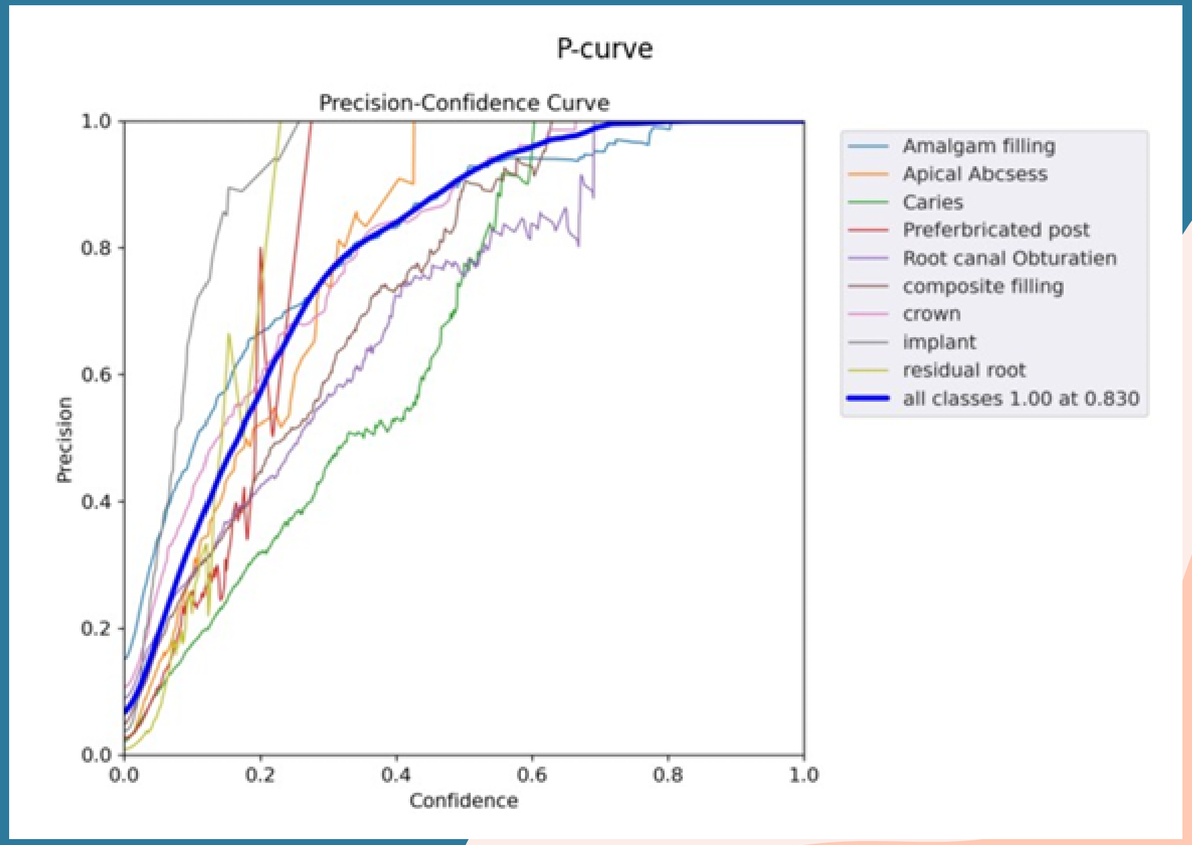




Root canal Obturatien
Apical abcsess
Implants
Crown
Caries
Amalgam filling
Preferbricated post
residual root
Composite filling

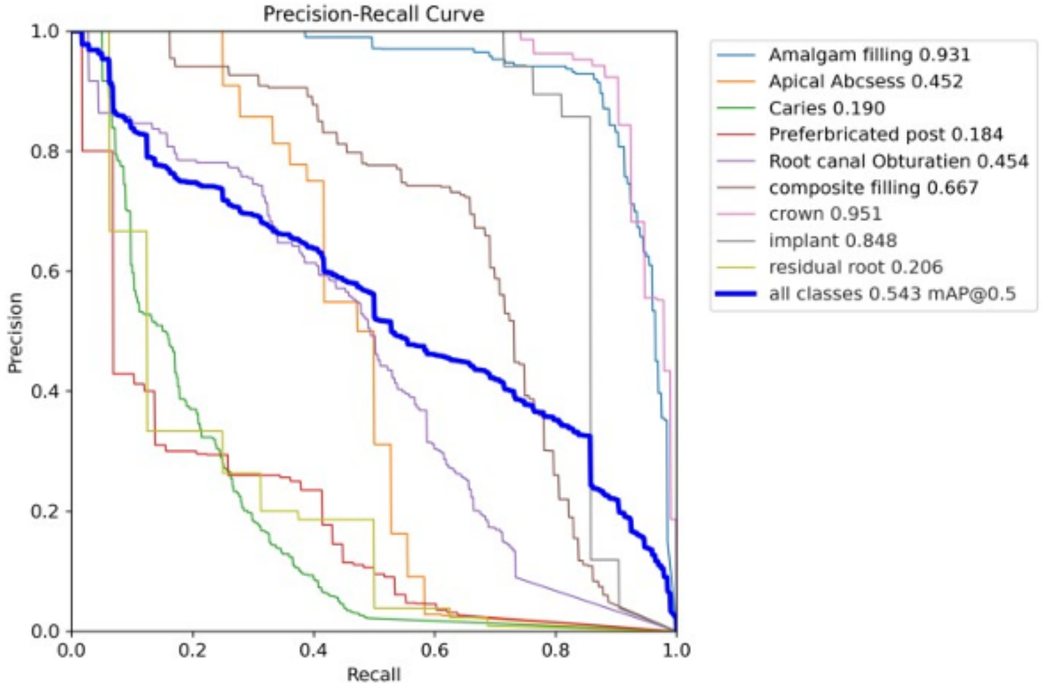
MODEL EVALUATION



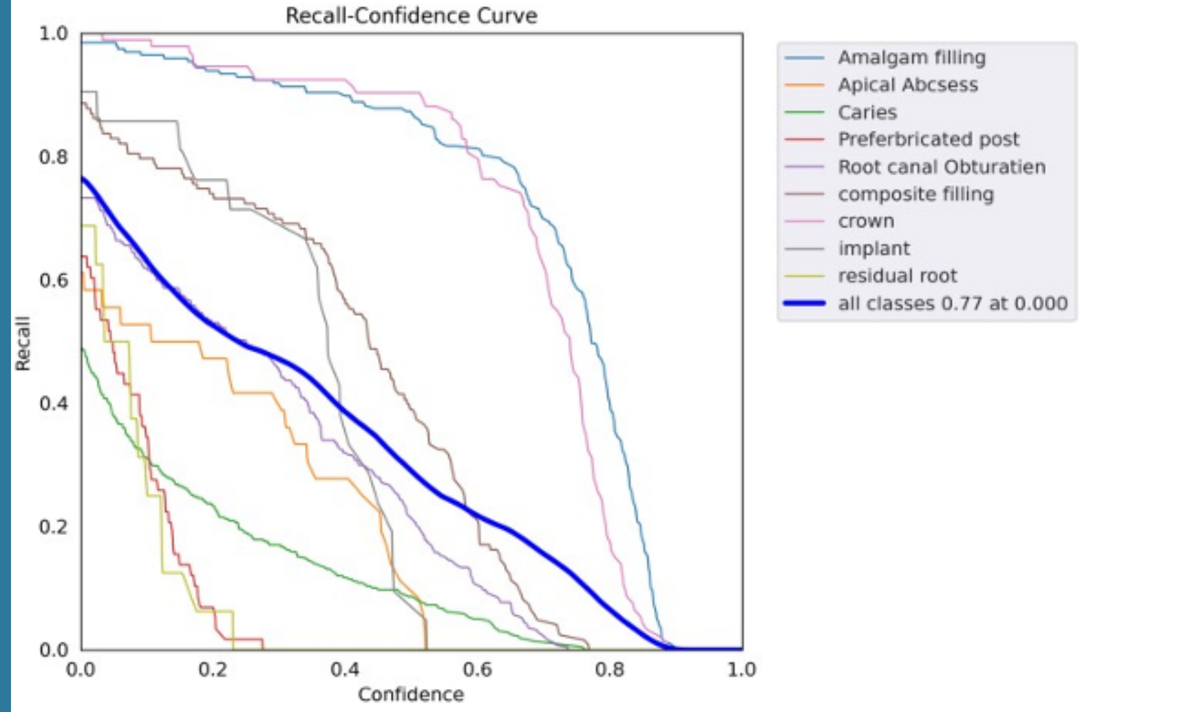


MODEL EVALUATION

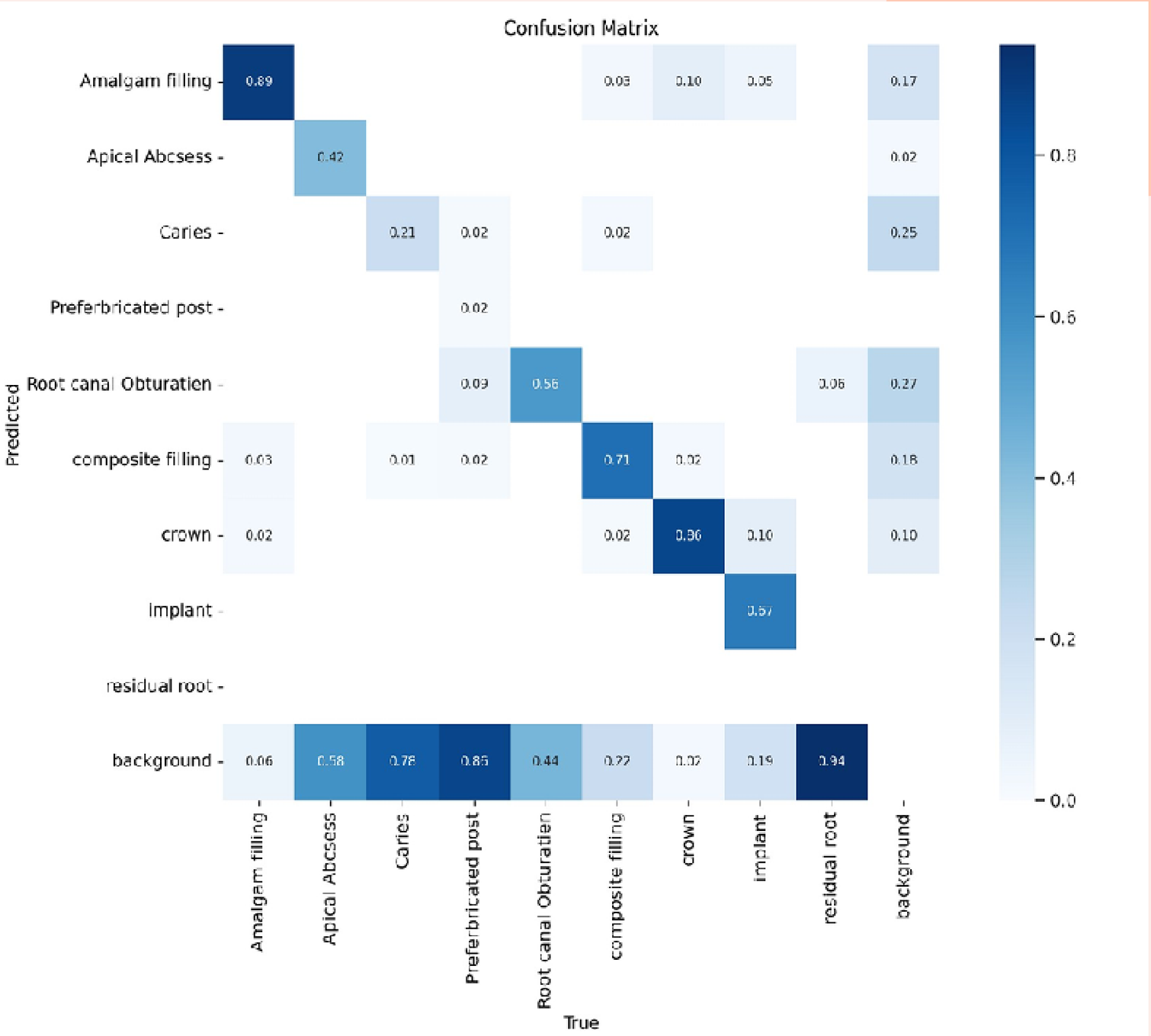
PR-curve



FR-curve



CONFUSION MATRIX



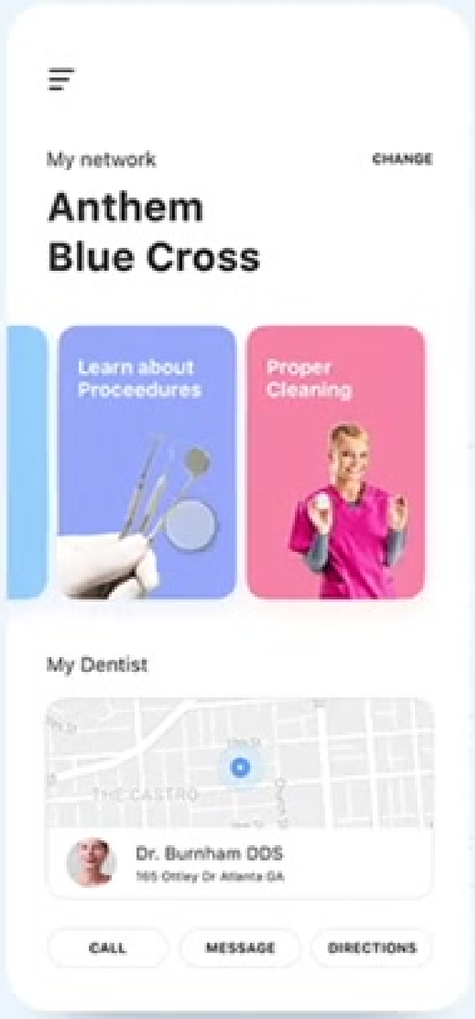
EXPERT FEEDBACK

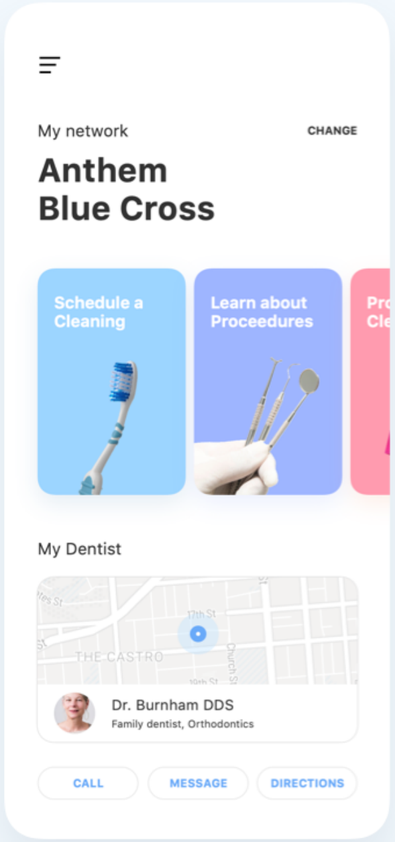
"As a practicing dentist, I have reviewed the model closely, and it offers dentists a valuable tool to make quicker, well-informed decisions based on radiographs. This innovative approach significantly advances dental treatment by integrating dentistry with deep learning.

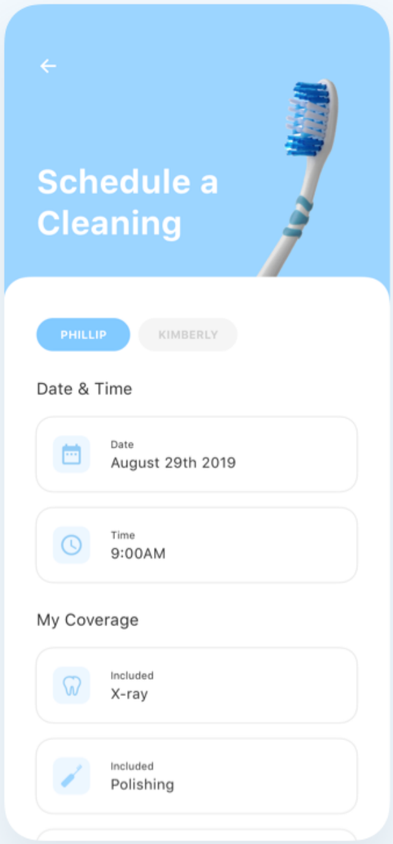
I believe this model has practical potential to improve treatment outcomes and patient satisfaction.

I wholeheartedly support its thoroughness and significance in our field”

OVERVIEW OF FUTURE WORK







THANK YOU