CSCI 6883: Master's Degree Project

Good dental health is a key part of staying healthy, but many people struggle with preventable problems like cavities and gum disease simply because they aren't caught early enough. This project is about creating a tool that uses deep learning to look at dental images and help identify potential issues. The idea is to make it easier to catch problems early, give people better access to preventive care, and lighten the workload for dentists so they can focus on helping patients.

Data Set:

For this I will be using **Dental OPG XRAY Dataset** published my Mendeley Data.

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2) Year: 12 August 2024.

3) Title of Dataset: Dental OPG XRAY Dataset.

4) Version Number: 4

5) Publisher: Mendeley Data.

6) DOI or URL: 10.17632/c4hhrkxytw.4

Languages and Libraries:

I will be using Python and libraries like Pandas, Numpy, Tensorflow, Matplotlib, SKlearn, Keras, Flask.

My Code:

I will have to code to Data normalising, Augmenting, model designing(Train, Test, Split), Model evaluation, Hyper tuning, Deployment.

Models:

CNN models like ResNet50 or EfficientNet as they are well suited for image classification and for medical image analysis.

Hyperparameters and Optimisation:

Hyperparameters like Learning rate, Batch Size, Number of Layers maybe included in the project and will use Gridsearch for optimisation.

Performance Evaluation:

Accuracy, Precision, Recall, F1 score, Confusion Matrix.

Github Repository link:

https://github.com/SaiTejaPerumalla-5297/perumalla-B00115297-Spring-2025.git