OralVis – Tooth Detection & Numbering (FDI) – Submission Report

Author: Arsalan Khan

Date: 2025-08-30

1. Approach Summary

We trained a YOLOv8s model on the OralVis dataset with 32 FDI tooth numbering classes. Dataset was split into 80% train, 10% validation, and 10% test. We used input size 640×640, pretrained weights (yolov8s.pt), and data augmentation (mosaic, scaling, rotation). Training was done for 100 epochs with batch size 16. Optional post-processing was applied to refine FDI numbering using upper/lower arch separation, left/right division, and sequential ordering within quadrants.

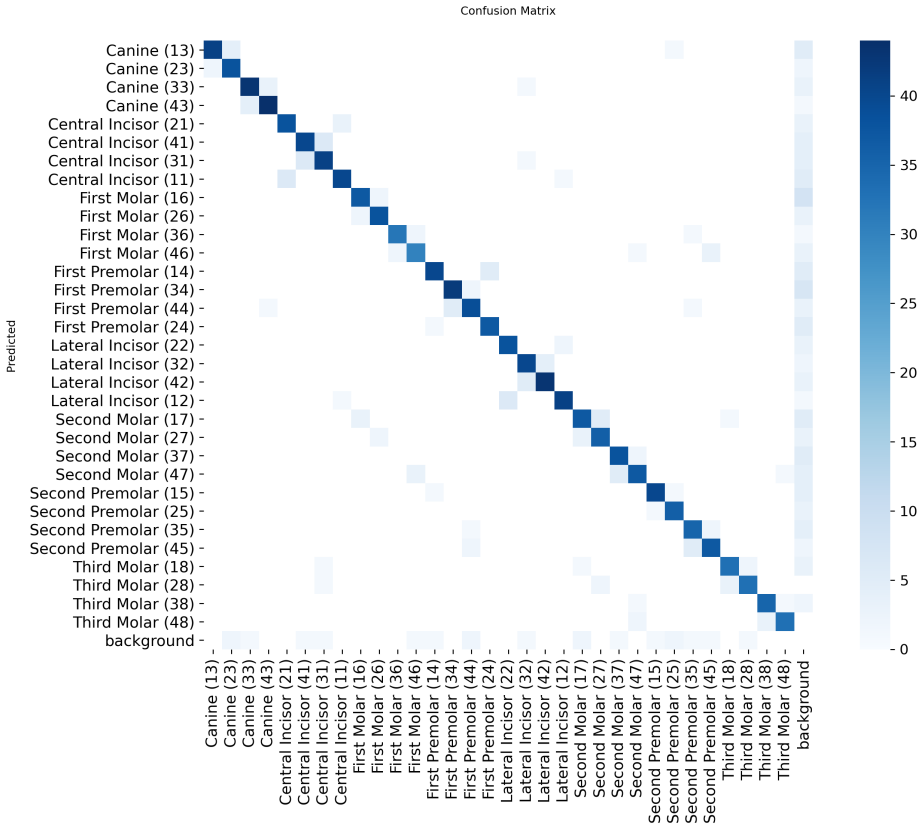
2. Training Configuration

• Model: YOLOv8s (Ultralytics)
• Pretrained Weights: yolov8s.pt
• Input Size: 640×640
• Epochs: 100
• Batch Size: 16
• Optimizer: SGD/Adam (default in Ultralytics)
• Augmentations: mosaic, HSV, scaling, flipping

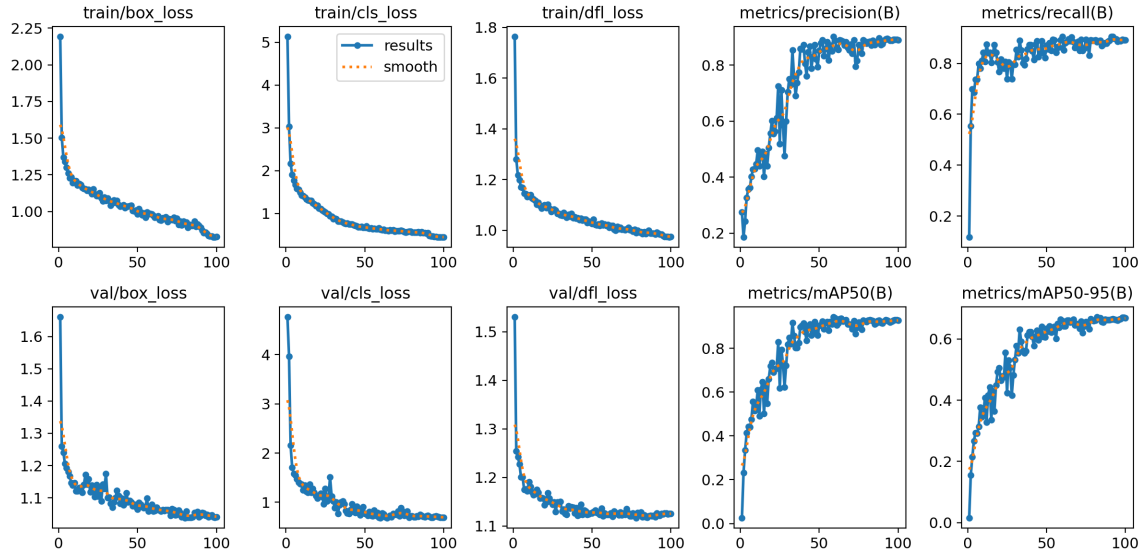
3. Results

Key metrics on validation/test sets:
- Precision: 0.8858110709416163
- Recall: 0.8849529813338397
- mAP@50: 0.9306709676115051
- mAP@50-95: 0.6731282123373216

Confusion Matrix: (see figure below).

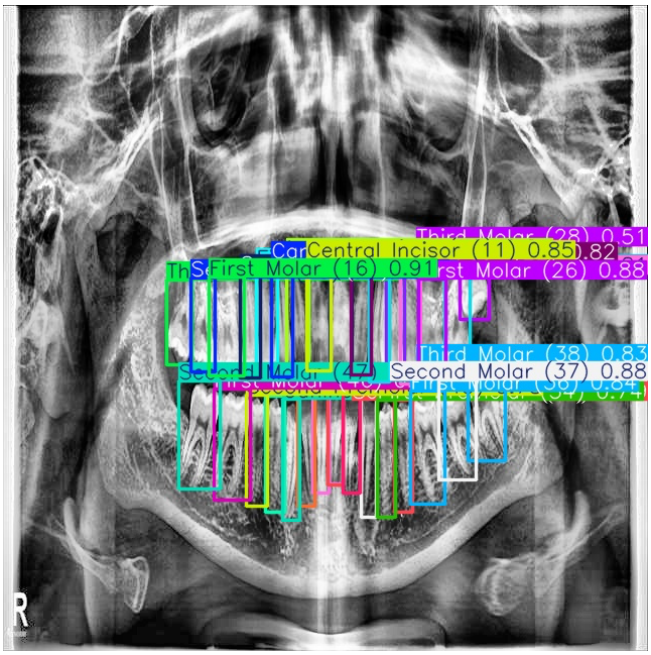


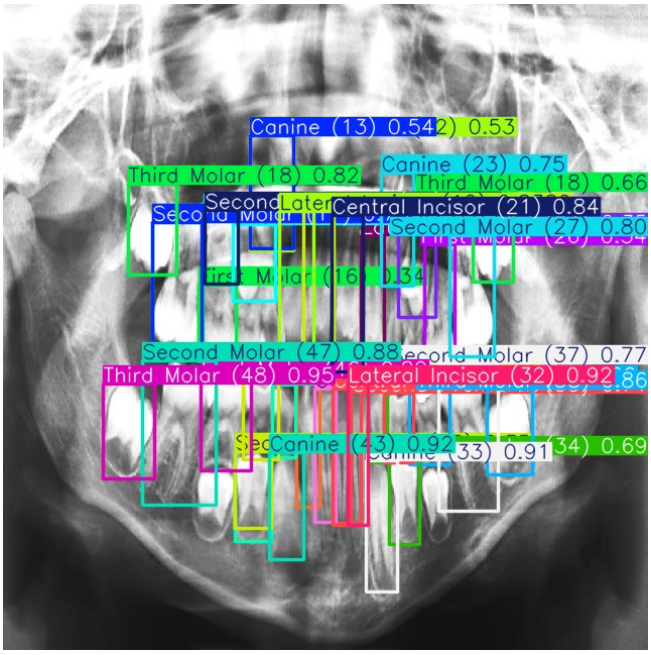
Training plots:

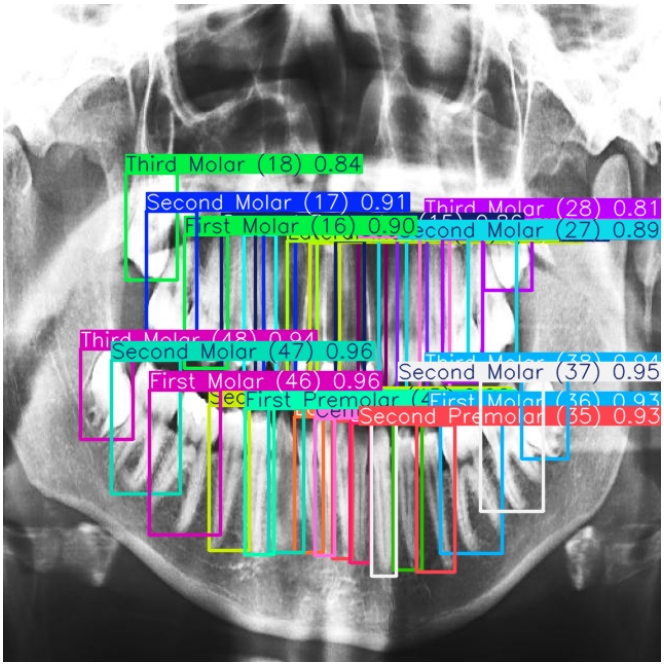


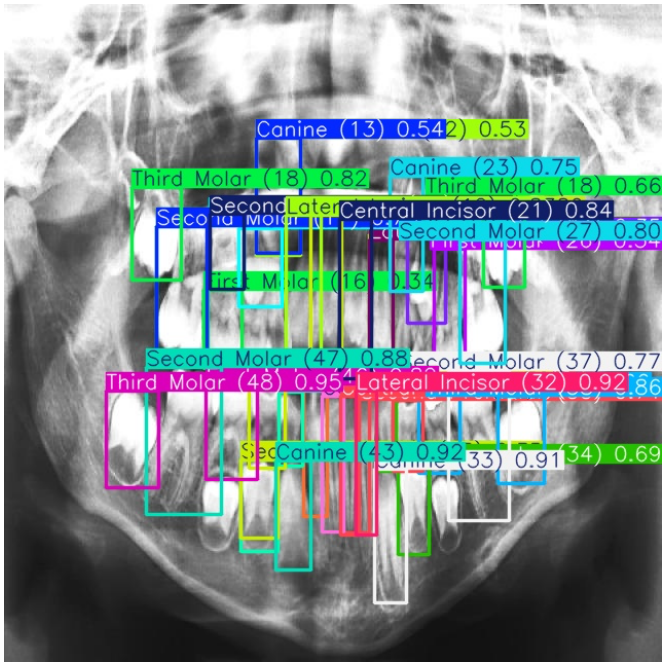
4. Sample Predictions

Below are sample test images with pre









6. Repository Link

GitHub Repository: https://github.com/arsalannkhann/OralVis-Tooth-Detection