



From TMJ Localization to Detection of Osteoarthritic Features: An Anatomically Guided 3D Deep Learning Pipeline for Cone-Beam CT

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Where should AI look for TMJ Osteoarthritic changes?



Source: <https://tmjsleepkc.com/symptoms/>

216 patients

An anatomically guided 3D deep learning pipeline for CBCT



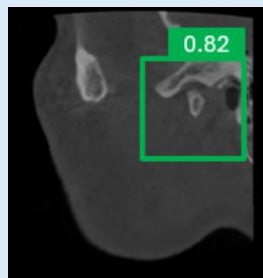
432 joints

How can anatomical insights guide AI to better detect TMJ Osteoarthritic changes on CBCT?



Anatomically Guided AI Pipeline: Localize, Segment, Classify

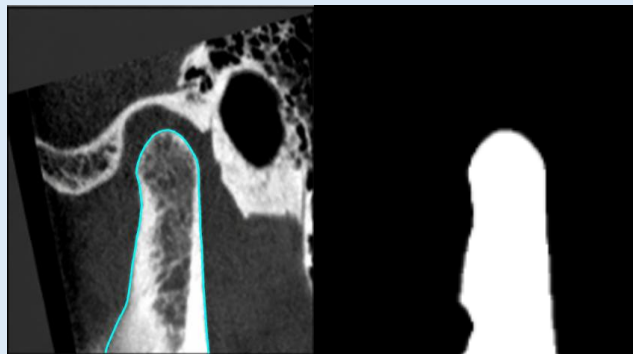
01 Localize



2D Faster R-CNN

Bilateral 3D TMJ ROIs

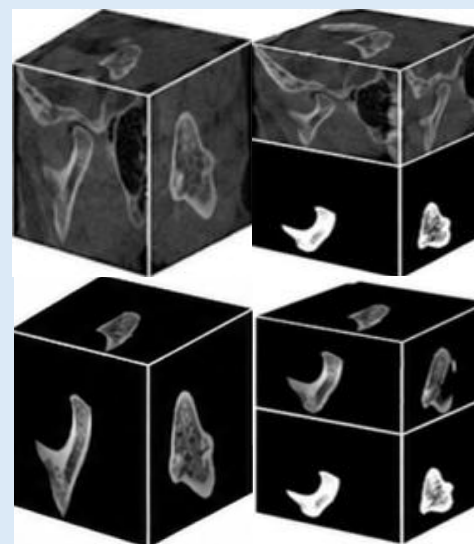
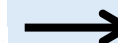
02 Segment



3D SegResNet

Segmented mandible mask

03 Classify



**OA Present
OR
Absent**

3D ResNet

4 Input Variations x 5 Volume Sizes
= 20 Comparisons