

## APPLICATIONS

- 1) Caries
- 2) Periapical Lesions
- 3) Fractures
- 4) Working length
- 5) Retreatment Success

## HISTORY

Term:- John McCarthy (1955)  
 Comprehensive Characterization:-  
 Richard Bellman (1978)

## FUTURE DIRECTIONS

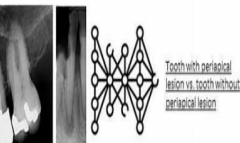
- 1) AI-based robotics and instrumentation
- 2) AI-powered microscopes
- 3) Enhance clinic practice management

## LIMITATIONS

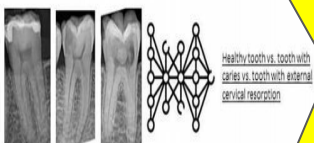
- 1) Black box nature
- 2) Limited data
- 3) Generalizability
- 4) Public datasets

# INTEGRATING AI INTO ENDODONTIC PRACTICE

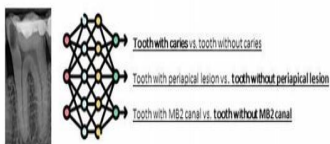
(a) Binary Classification



(b) Multiclass Classification

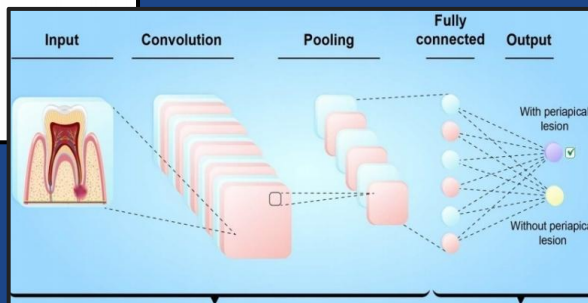


(c) Multilabel Classification

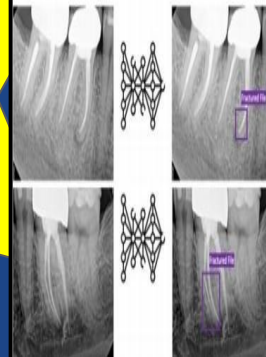


## CHALLENGES

- 1) Data protection
- 2) Accountability and liability
- 3) Regulation



(a) Object Detection



(b) Landmark Detection

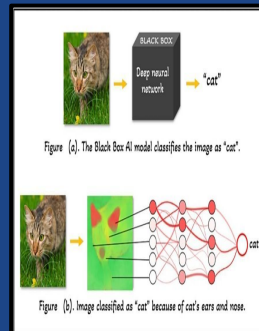
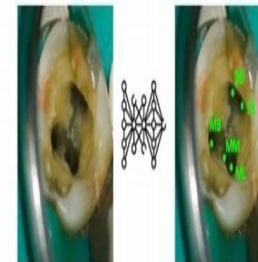


Figure (a). The Black Box AI model classifies the image as "cat".

Figure (b). Image classified as "cat" because of cat's ears and nose.

## REFERENCES

- <https://doi.org/10.1111/iej.14127>,  
<https://doi.org/10.1177/00220345241255593>,  
<https://doi.org/10.1111/iej.14128>,  
[10.7759/cureus.27405](https://doi.org/10.7759/cureus.27405)

## ADVANTAGES

- 1) Accuracy, efficiency
- 2) Consistency, standardization
- 3) Interobserver variability less.