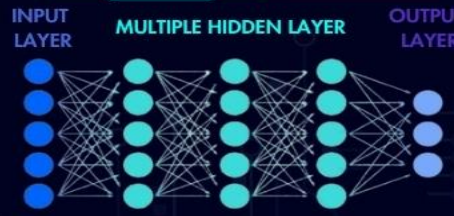
39th IACDE
National Conference

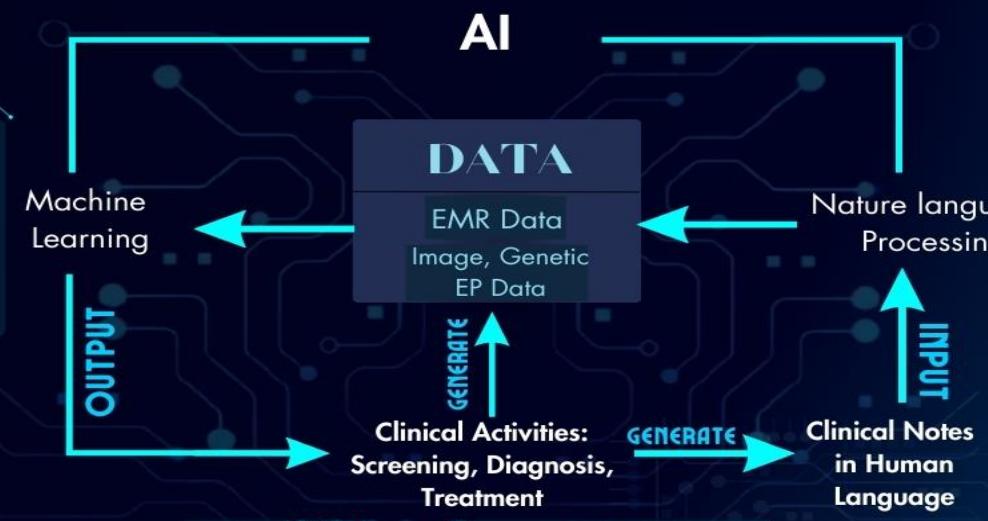
# REVOLUTIONIZING ENDODONTICS WITH ARTIFICIAL INTELLIGENCE

## WHAT IS AI?

AI refers to ability of machines that uses computer technology to simulate intelligent behavior, critical thinking & decision making similar to humans.

## AN ILLUSTRATION OF NEURAL NETWORK



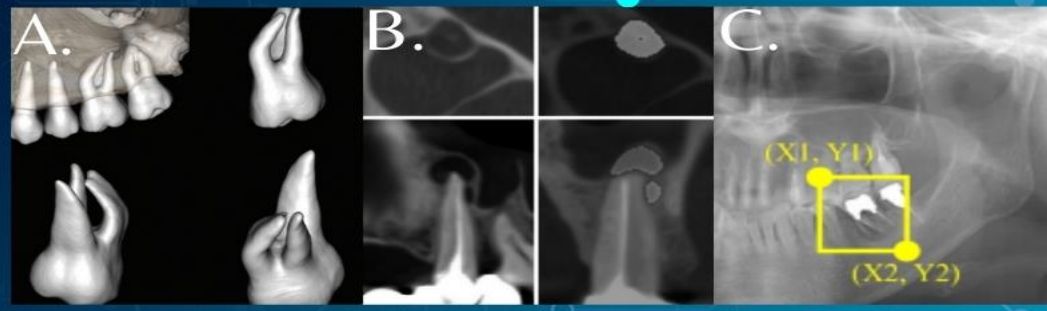

## GAPS IN AI AND ENDODONTICS

- FINANCIALLY NOT FEASIBLE
- RESULTS CAN BE MISINTERPRETED
- FURTHER STUDIES NEED TO BE DONE

**DENTISTS ARE ADVISED TO USE AI PREDICTIONS TO ASSIST IN DIAGNOSING PATIENTS AND TO SUPPLEMENT THEIR OWN CLINICAL EXAMINATIONS, BUT NOT TO REPLACE THEM.**

| AIM | AI METHOD |
|---|---|
| DETECT PERIAPICAL LESION | ML, CNN, DL |
| DETECT ROOT FRACTURES | ML, CNN, PNN |
| WORKING LENGTH DETERMINATION | ML, ANN |
| DETECT ROOT CANAL & MORPHOLOGY | DL, ML, CNN |
| RETREATMENT PREDICTION | ML, CBR |
| PREDICTION OF STEM CELL VIABILITY | ML, ANN (NFIS) |

ANN: artificial neurons network; CBR: case-based reasoning;
CNN: convolutional neurons network; DL: deep learning;
ML: machine learning; NFIS: neuro-fuzzy inference system;
PNN: probabilistic neural network.




A. Diagnocat AI software: Teeth segmentation automatically generated by software allowing the clinician to visualize the severe dilaceration on the MB root.

B. AI for detecting periapical pathosis on cone-beam computed tomography scan.

C. AI for detecting vertical root fracture on panoramic radiography.