



# **MAR ATHANASIOUS COLLEGE OF ENGINEERING , KOTHAMANGALAM**

## **Initial Project Report**

**DEEP LEARNING-BASED CLASSIFICATION OF DENTAL PATHOLOGIES FROM  
RADIOGRAPHIC IMAGES**

Done by

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### Project Synopsis

#### Topic: Deep Learning-Based Classification of Dental Pathologies from Radiographic Images

Deep learning has transformed medical imaging, significantly improving diagnostic accuracy and efficiency. In dentistry, X-ray analysis is crucial for diagnosing various conditions but often depends on the subjective judgment of professionals. To overcome these limitations, this report proposes a deep learning model using NAS Net (Neural Architecture Search Network), an advanced convolutional neural network (CNN) architecture.

NAS Net automates the search for optimal network configurations, unlike conventional CNNs that require manual design and tuning. This automation enables NAS Net to find the best architecture for specific tasks, balancing accuracy and computational efficiency. The proposed model will be trained on a dataset of over 8000 radiographic images, annotated for four dental conditions: cavity, implant, filling, and impacted tooth.

The model will detect tooth decay, identify implants, recognize restorations, and classify misaligned or unerupted teeth. By leveraging NAS Net's optimization capabilities, the model aims to achieve high accuracy and generalizability, providing valuable diagnostic support and improving clinical workflows.

**Dataset link:** <https://www.kaggle.com/datasets/imtkaggleteam/dental-radiography>

#### References:

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