

## Project Title: AI-Enhanced Dental Radiography Diagnosis

### Description:

Leveraging GANs, the project enhances dental radiography interpretation, aiding dentists in diagnosing conditions by generating high-quality images and providing intelligent analysis.

### Key Features and Components:

1. **Dental GAN Image Enhancement:** Develops a specialized GAN model to enhance dental X-ray images, improving clarity for accurate diagnosis.
2. **Pathology Prediction Module:** Integrates an AI module recognizing dental pathologies for more accurate predictions using GAN-enhanced images.
3. **Interactive Diagnosis Interface:** Designs an intuitive interface for dentists to upload X-ray images, receiving instant AI-enhanced visuals and predictions.
4. **Customizable Diagnostic Reports:** Implements a system generating detailed reports based on AI analysis, allowing customization for patient records.
5. **Continual Learning Framework:** Develops a framework for continual learning, enabling the AI model to adapt over time based on feedback for current diagnostic standards.

### Problem Statement:

Clinicians face challenges in dental radiography, with issues in image quality and manual analysis leading to potential misdiagnoses and operational inefficiencies. The project addresses these challenges by introducing GAN-based enhancements and an AI pathology prediction module for a more accurate and efficient dental radiography diagnosis.

### Added Value:

1. **Enhanced Diagnostic Accuracy:** Specialized GAN enhancement transforms low-quality X-ray images, significantly improving diagnostic accuracy and reducing misinterpretation risks.
2. **Precision in Pathology Prediction:** AI pathology prediction module elevates precision, recognizing dental pathologies with heightened accuracy, leading to improved patient outcomes.
3. **Streamlined Workflow with Interactive Interface:** An interactive interface facilitates efficient diagnosis, allowing dentists to upload X-ray images and receive real-time AI-enhanced visuals and predictions.
4. **Customizable Diagnostic Reports:** Integral system generates detailed reports based on AI analysis, highlighting concerns and suggesting treatment plans, customizable for comprehensive documentation.
5. **Continual Learning Framework for Adaptability:** The project incorporates a continual learning framework, ensuring the AI model adapts over time based on feedback, staying current with evolving diagnostic standards and technological advancements.

