

DenTech (v2): A Platform for Oral Cancer Diagnosis Utilizing Artificial Intelligence

Project Description:

This is a platform for oral cancer (OC) diagnosis utilizing deep learning (DL) models and facilitating retraining them. DenTech is designed to be user-friendly with aim to classify OC lesions in benign stages from photographic images and videos, and segment lesion areas. There are five main roles of the DenTech software users: namely, admin, nurse, dentist, specialist, and data scientist. Admin setups permissions and views of the platform. Nurse uploads images, or streaming videos of the patient's mouth, to be notified with the diagnosis in near real-time. Dentist performs initial human diagnosis and assess the DenTech platform diagnosis. Specialist affirms and corrects, if needed, the outputs (the dentist and DenTech diagnosis), which in turn are used by the data scientist to retrain the ML models. Data scientist taking care of technical issues such as updating ML models and database system. Moreover, DenTech platform could be used for educational purposes, therefore, a student role is added. In summary, DenTech platform: 1) Captures images and videos of individual's mouth. 2) Classifies and segments sixteen OC lesions in near real-time. 3) Provides easy graphical user interface to interact with. 4) Reduces general practitioners effort and time for diagnosing OC lesions. 5) Automatically updates ML models and equipped with a weekly performance report.

Duties/Activities:

The Intern will understand the scope of the project and the main components. He/she will work on the existing code and gets supervision from the mentor in understanding the code. Then, each intern will be responsible to develop one component as an outcome of this project, which would include:

- 1- Optimize the current code with DevOps and MLOps.
- 2- Adding more features to the existing DenTech System.

Required Skills:

Python, JavaScript, React Native, PHP, and HTML, programming skills are required. Understand the basic machine learning / deep learning architectures is a plus.

Learning Opportunities:

The intern will have opportunity to work with scientists and software engineers on promising research problems. In addition, it is great opportunity to participate in solving real-world problems.

Expected Team Size: 2-3

Mentors

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