

Problem Statement: Implement an image segmentation algorithm to identify and classify different types of cancer cells in medical images.

Finalized Title:- AI-Driven Image Segmentation for Accurate Cancer Cell Identification and Classification

Abstract:

Accurate diagnosis of cancer significantly relies on the precise identification and classification of cancer cells within medical images such as histopathological slides. Manual examination of these images by pathologists is not only time-consuming but also subject to human error and variability. With the increasing incidence of cancer worldwide, there is an urgent need for automated, reliable, and efficient diagnostic tools to assist medical professionals in analyzing medical images.

The objective of this project is to develop an AI-driven image segmentation algorithm that can accurately identify and classify different types of cancer cells in medical images. By leveraging advanced deep learning techniques, this tool aims to enhance the accuracy of cancer diagnoses, reduce the workload on pathologists, and ultimately contribute to better patient outcomes.

This project will involve the collection and preprocessing of a diverse dataset of histopathological images to train and validate the deep learning model. The model will be designed to perform both segmentation and classification tasks, ensuring that it can accurately delineate cancer cells and identify their types. Advanced techniques such as convolutional neural networks (CNNs) and transfer learning will be employed to enhance the model's performance. The final system will be evaluated using rigorous metrics and compared against existing methods to demonstrate its efficacy. Additionally, a user-friendly interface will be developed to facilitate easy interaction with the model, allowing medical professionals to upload images and receive diagnostic results seamlessly.

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