Pimpri Chinchwad Education Trust (PCET)
Pimpri Chinchwad College of Engineering
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Department of Information Technology

Diabetic Retinopathy Detection

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Problem Statement

Diabetic Retinopathy Detection

- Diabetic Retinopathy (DR) is a complication of diabetes that affects the blood vessels in the retina, leading to vision impairment and blindness if left untreated. The challenge is timely identification of DR in its early stages, as symptoms often manifest when irreversible damage has already occurred.

- Early detection is crucial for effective intervention and prevention of vision loss. With the rising prevalence of diabetes globally, there is an increasing burden on healthcare systems to provide timely and accurate DR screenings, necessitating the development of efficient and accessible diagnostic tools.

- Our project proposes a solution through the implementation of computer vision and machine learning algorithms for automated Diabetic Retinopathy detection. By analyzing retinal images, our system can identify early signs of DR, enabling prompt medical attention. This approach aims to enhance accessibility to screenings, reduce the workload on healthcare professionals, and ultimately contribute to better management of diabetic complications and preservation of patients' vision.

Domain And Area of Interest

Domain: Deep Learning

Area of interest:

- Healthcare
- Technology and AI
- Accessibility
- Data Science

Motivation

- Diabetic Retinopathy is a leading cause of blindness among diabetic individuals. Early detection and intervention through automated systems can prevent irreversible vision loss, significantly improving the quality of life for affected individuals.
- The prevalence of diabetes is rising globally. By addressing Diabetic Retinopathy, the project contributes to global health initiatives, ensuring that individuals, regardless of geographical location, have access to timely and effective screenings.

Aims and Goals

- Develop an efficient Diabetic Retinopathy Detection system for early intervention, enhance accessibility to screenings, and foster collaboration for seamless integration into healthcare practices

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- Deploy a cost-effective and user-friendly Diabetic Retinopathy Detection solution to empower individuals with diabetes, prioritize early diagnosis, and contribute to global efforts in preventing vision loss.

Objectives and Scope

- To increase classification performance
- To make a generalized model
- Ensure compatibility with different size images

Methodology

- Gathering a dataset of retinal images with diabetic retinopathy labels.
- Split your dataset into training, validation, and testing sets.
- Model Selection - CNN or Transfer Learning
- Optimization and Hyperparameter tuning
- Evaluation with metrics like accuracy

Thank You