

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING PROJECT PROPOSAL PROJECT PHASE 1 (CSD415)

Group No: 1

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PROPOSAL 1

Title : **Brain Tumor Detection Using Transfer Learning**

Abstract:

Brain tumors are among the most challenging and life-threatening conditions in medical science. Early and accurate detection is critical for effective treatment planning and improving patient outcomes. Traditional methods of brain tumor diagnosis often involve manual interpretation of medical images, which can be time-consuming and prone to human error. With the advancement of deep learning techniques, automated systems for medical image analysis have gained significant attention, particularly in detecting brain tumors from MRI scans. This study explores the application of transfer learning, a powerful technique that leverages pre-trained deep learning models, for the automated detection of brain tumors. Transfer learning allows the model to utilize the knowledge gained from large-scale image classification tasks, enabling efficient and accurate classification of MRI images with limited labeled data. We employed a pre-trained convolutional neural network (CNN) model and fine-tuned it on a dataset of MRI images to distinguish between normal and tumor-affected brain tissues. The model's performance was evaluated based on various metrics, including accuracy, sensitivity, specificity, and F1-score. The results demonstrate that transfer learning significantly improves the model's ability to detect brain tumors with high accuracy, even with a relatively small dataset.

OUTCOME:

Improved Healthcare Outcomes: Enhanced detection accuracy leads to earlier diagnosis and treatment of brain tumors, which can significantly improve survival rates and quality of life for patients.

Increased Accessibility: Transfer learning can help develop diagnostic tools that are cost-effective and can be deployed in various healthcare settings, including under-resourced areas. This can make advanced medical imaging more accessible to a larger population.

Support for Medical Professionals: By providing reliable tools for detecting brain tumors, transfer learning can assist healthcare providers in making informed decisions, reducing diagnostic errors, and streamlining the workflow in clinical environments.

Guide Comments:

Guide Signature

PROPOSAL 2:

Title: **Handland mark detection using OpenCV**

Abstract:

Hand landmark detection using OpenCV is a sophisticated computer vision technique designed to identify and track specific points on a human hand, facilitating applications such as gesture recognition and enhanced human-computer interaction. This method leverages the capabilities of OpenCV, a widely-used open-source computer vision library, along with deep learning frameworks to achieve accurate and real-time detection of hand landmarks. The process begins with data collection and preprocessing, where a diverse set of hand images or videos is gathered and prepared. A deep learning model is then trained to recognize key landmarks on the hand, such as fingertips, joints, and the palm center. Once the model is trained, it can be integrated with OpenCV to process live video feeds, enabling real-time detection and interaction. This allows for a variety of applications, including virtual reality and gaming, sign language recognition, touchless control interfaces, and more. By accurately tracking hand movements and gestures, this technology significantly enhances the ways humans interact with computers, making interactions more intuitive and natural. The real-time performance and accuracy of hand landmark detection using OpenCV make it a valuable tool in the development of advanced interactive systems and user interfaces

OUTCOME:

Support for Healthcare: Hand landmark detection can be used in rehabilitation and therapy, enabling tracking of hand movements for patients recovering from injuries, thus facilitating remote therapy sessions and progress monitoring.

Cultural Preservation: By enabling the translation of sign languages and gestures into digital formats, this technology can aid in the preservation and promotion of diverse cultural heritages related to communication.

Research and Development: The advancements in hand detection encourage research into gesture-based technologies, leading to innovations that can benefit society in various sectors, including education, healthcare, and entertainment.

GUIDE COMMENTS:

GUIDE SIGNATURE

PROPOSAL 3

TITLE 3: **CharityConnect: A Comprehensive Platform for Donations, Volunteer Management, and Crisis Response**

ABSTRACT:

This project introduces "CharityConnect," a comprehensive application designed to streamline charitable activities by facilitating donations, managing volunteer efforts, and coordinating food distribution campaigns. The app features secure payment gateways, detailed charity listings, and real-time notifications, ensuring donors and volunteers can easily support causes and stay informed about urgent needs. The volunteer management system allows users to browse, apply for, and track volunteer opportunities, with special emphasis on health and safety during pandemic responses. Additionally, the app enables efficient organization of food distribution events to address food insecurity. CharityConnect provides a valuable learning experience for computer science students, covering app development, user interface design, and backend infrastructure. By enhancing the efficiency and reach of charitable organizations, CharityConnect aims to foster community involvement and provide crucial support during crises, ultimately making a positive societal impact.

OUTCOME

Increased Charitable Engagement: By providing a user-friendly platform, CharityConnect can encourage more people to participate in charitable activities, whether through donations or volunteering. This can lead to a greater sense of community and collective responsibility.

Efficient Volunteer Management: With tools for organizing and managing volunteers, the platform can streamline the recruitment process, making it easier for organizations to mobilize resources during crises or community events. This efficiency can lead to faster and more effective responses to societal needs.

Rapid Crisis Response: By facilitating quick mobilization of resources and volunteers during emergencies, CharityConnect can help communities respond more effectively to crises, whether they are natural disasters, health emergencies, or social issues.

GUIDE COMMENTS:

GUIDE SIGNATURE

