Alzheimer Disease detection Using Deep Learning Models

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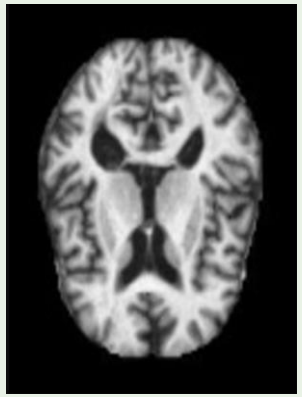
Introduction

We dive into the world of deep learning and medical innovation to tackle Alzheimer's Disease, a critical challenge impacting millions. By harnessing the power of cutting-edge models like **VGG16**, **InceptionV3**, **ResNet50**, and **AlexNet**, our project transforms MRI scans into tools for early, accurate diagnosis, paving the way for better care and hope for patients.

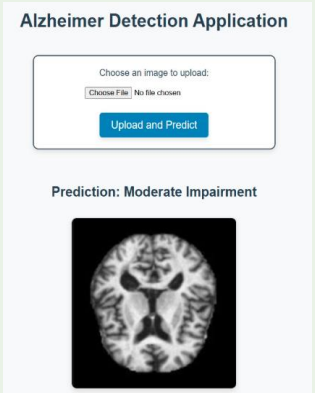
Objectives

- **Train Models:** Detect Alzheimer's Disease using MRI data with deep learning.
- **Leverage Architectures:** Utilize **VGG16**, **ResNet50**, **InceptionV3**, and **AlexNet**.
- **Evaluate Performance:** Measure accuracy, loss, and classification metrics.
- **Save Models:** Preserve trained models for future use.
- **Deploy Models:** Enable real-world diagnostic applications.

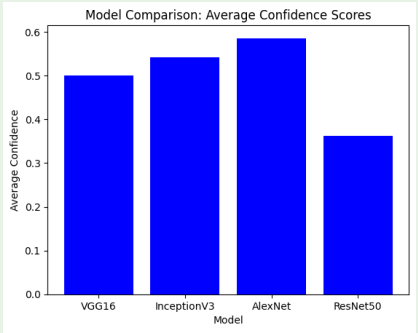
Results & Visuals



Input- Moderate Impairment



Predict-Moderate Impairment (Using Flask)



Highest Accuracy - AlexNet (82%)

Methodology

- **Dataset Selection:** Used a diverse Alzheimer's MRI dataset ensuring quality and variety.
- **Preprocessing:** Standardized image sizes, removed artifacts, and enhanced contrast.
- **Model Selection:** Chose VGG16, InceptionV3, ResNet50, and AlexNet for classification.
- **Transfer Learning:** Used pre-trained ImageNet weights to optimize training.
- **Training and Validation:** Split data for training/validation, tracking performance with key metrics.

Conclusion

This project highlights the potential of AI in Alzheimer's detection using Deep Learning models. **AlexNet** achieving the highest accuracy among all. Our work marks a step toward leveraging technology for early diagnosis and improved patient outcomes.

References

Dataset Link - https://shorturl.at/Qi4LO

Project Link - https://shorturl.at/EI6GR