

Alzheimer's Classification

Project Title: Alzheimer's Classification (Determining the Level of Dementia)

Team Members:

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Background and Problem Significance:

Alzheimer's disease is one of the leading causes of dementia and is most prevalent in the aging population. The prevalence of the disease increases with age, affecting approximately 10-15% of the population aged over 65, 20-30% of those over 80, and 40% of those over 85. Given the rising number of elderly individuals and the continuously increasing trend of Alzheimer's cases, it is imperative to address this issue and contribute to the advancement of medical knowledge within our country.

Project Benefits and Applications:

- Beneficial for individuals interested in studying Machine Learning.
- Determine the severity level of Alzheimer's disease from magnetic resonance imaging (MRI) images.
- Assist medical professionals in diagnosis and practical use.
- The developed model can be adapted and applied to solve other related problems.

Data Sources:

- Dataset: <https://www.kaggle.com/code/aashidutt3/alzheimer-classification-with-mri-images/data>
 - The dataset consists of 33,983 MRI images of non-overlapping brain scans, along with the corresponding severity levels:
 - Mild Demented
 - Moderate Demented
 - Non Demented
 - Very Mild Demented
- Dataset Size: 400.86 MB
- Training Dataset Size: 27,186 Files
- Test Dataset Size: 6,796 Files

Data Preparation and Cleaning Process:

- Image resizing to 224x224 pixels
- Class separation based on severity levels
- Outlier removal
- CNN model for extracting important features from the images, such as pixel correlations in nearby regions

Expected Outcome:

- Accurate classification of the severity levels of Alzheimer's disease.
- Practical application for diagnosis and usage in medical settings.