

Early prediction of Alzheimer's disease using deep learning models (Mid-progress Report)

Interpretability & Explainability in AI course

DSAI 305

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Spring 2025

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1. Model

This is an implementation of the second paper [1] of my papers. This paper discusses an end-to-end model for classifying Alzheimer's disease (**AD**) stages from MRI scans and aims to distinguish between four main stages of AD: Non-Demented, Very Mild Dementia, Moderate Dementia, and Mild Dementia.

2. Challenges

For our dataset (OASIS) [2], we noticed that it contains 67222 images for the Non-Demented class, 13725 for the Very Mild Dementia, 488 images for the Moderate Dementia class and 5002 for the Mild Dementia class, and of course, these numbers show imbalance in data, which was a great challenge in data so I used data augmentation techniques to solve this problem. Also, did image resizing before input to the model, as the paper used images of equal size for its dataset and finally, normalization.

3. Reference

[1] J. S. Kim *et al.*, “Deep learning-based diagnosis of Alzheimer’s disease using brain magnetic resonance images: an empirical study,” *Scientific Reports*, vol. 12, no. 1, Oct. 2022, doi: 10.1038/s41598-022-22917-3.

[2] <https://www.kaggle.com/datasets/ninadaithal/imagesoasis>