

## 5.2 Project Statement

### Problem Statement

Alzheimer's disease is a progressive neurological disorder with no known cure. Early detection using MRI scans is crucial. Manual diagnosis is slow and error-prone. This project automates 4-stage classification using deep learning.

### Scope of the Project

- Classify MRI scans into 4 Alzheimer's stages
- Achieve >85% accuracy using transfer learning
- Provide explainable AI with Grad-CAM
- Build a reusable, open-source pipeline

### Target Users

- Medical researchers
- Data science students
- Radiologists
- Healthcare AI developers

### High-Level Features

- Transfer learning models
- Data augmentation
- Training + evaluation
- Single-image prediction
- Grad-CAM heatmaps
- Full documentation