

## Project Guideline: Idea Proposal Submission

### 1. Project Idea:

- My project focuses on healthcare, aiming to create a new app that helps doctors accurately diagnose Alzheimer's disease stages in patients. Using advanced deep learning technology, specifically a Convolutional Neural Network (CNN), along with two preprocessing methods called Histogram of Oriented Gradients (HOG) and Haar wavelet, the app will simplify the diagnostic process for medical professionals. It will provide fast and dependable assistance, improving patient care.
- With Alzheimer's disease becoming more common, my app aims to help doctors diagnose it faster. It uses advanced tech like deep learning and special methods called Histogram of Oriented Gradients (HOG) and Haar wavelet to speed up the process. Early diagnosis is key for better patient outcomes and slowing down the disease. Spotting it early means doctors can start treatment sooner, giving patients better care and a better quality of life.

### 2. Relevance to Sustainable Development Goals (SDGs):

- SDG: Good Health and Well-being -My application aims to improve healthcare outcomes by facilitating early detection and diagnosis of Alzheimer's disease. By providing timely and accurate assessments, it can contribute to better patient care and quality of life for individuals affected by the condition.

### 3. Literature Examples:

NO	Writers	Preprocessing Methods	Models	Result
1	Swathi & Ketki		DCNN	98.57%
2	<u>Hadeer,</u> <u>Mahmoud&amp;Amira</u>	VGG19	CNN	97%

- [https://link.springer.com/chapter/10.1007/978-981-15-5546-6\\_50](https://link.springer.com/chapter/10.1007/978-981-15-5546-6_50)
- <https://link.springer.com/article/10.1007/s12559-021-09946-2>

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### **4. Describe Your Data:**

- I'm using a dataset from Kaggle with 6400 images showing 4 stages of Alzheimer's disease. The data is in image format. To analyze it, I'll apply two different preprocessing methods: HOG and HaarWavelet. Then, I'll use CNN modeling. Additionally, I'll apply segmentation and enhancement techniques to extract important features from the images.

### **5. Approach (Machine Learning or Deep Learning):**

- For this Project: I'll employ a deep learning method, utilizing Convolutional Neural Networks (CNNs). CNN architectures offer several advantageous characteristics. They feature simple structures that effectively reduce computational complexity and memory requirements. Moreover, they help mitigate overfitting issues while ensuring manageable processing times. Given these attributes, CNNs are particularly well-suited for analyzing complex image datasets, making them the ideal choice for our Alzheimer's disease detection application.