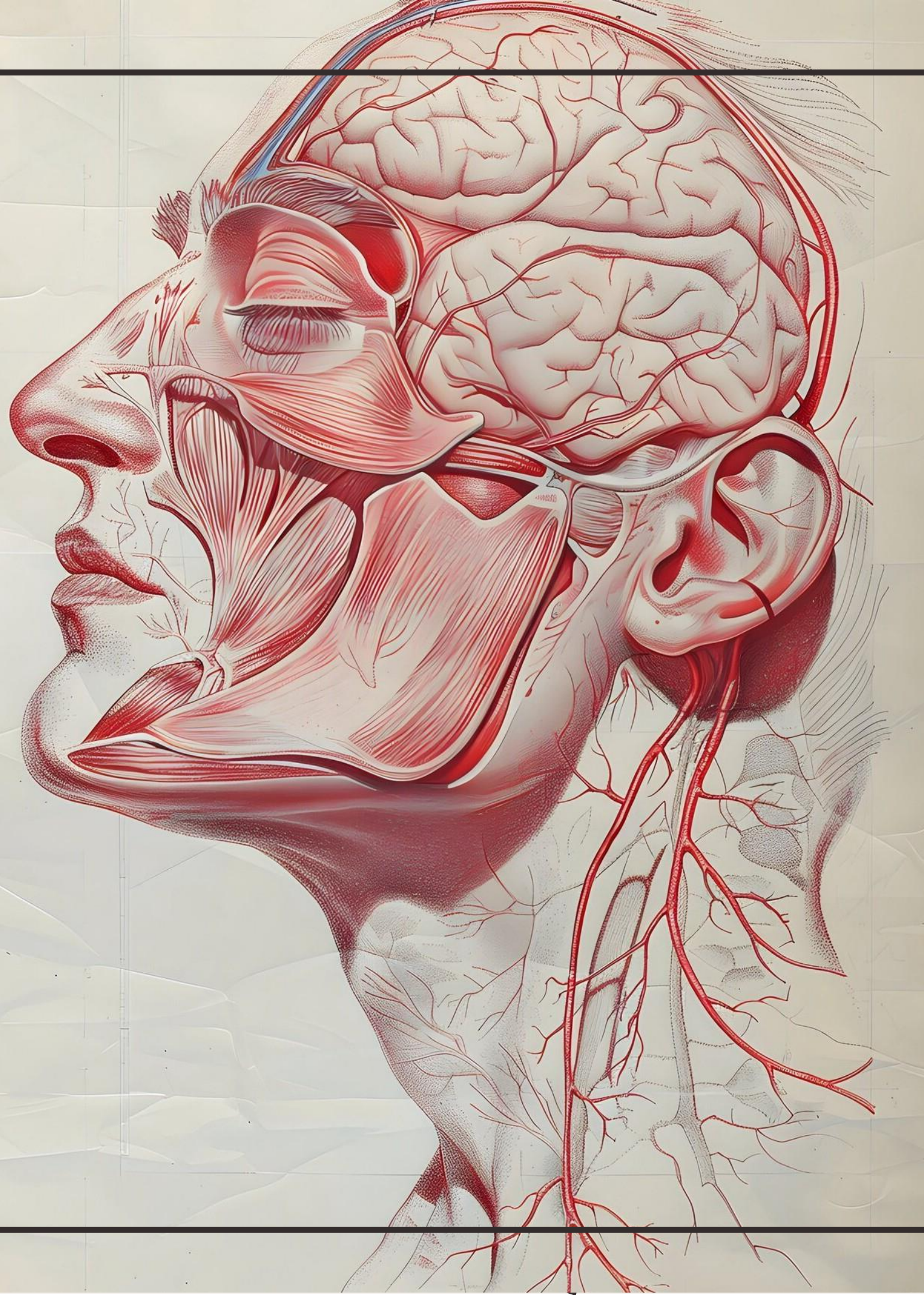




# AI4All: A Proposal for an Alzheimer's Disease Prediction Model





## Introduction to Alzheimer's Prediction

Alzheimer's disease is a **progressive** neurodegenerative disorder that affects millions globally. Early detection is crucial for effective **intervention**. This presentation proposes a **prediction model** aimed at enhancing early diagnosis and improving patient outcomes.



# Research Question



"What are the key cognitive and motor function patterns in individuals with Alzheimer's disease, and how consistent are these patterns across different task types?"

# Sources of Bias

**Selection Bias:** The dataset includes participants from a specific region, socioeconomic status, or healthcare system, the findings might not generalize well to the broader population.

**Sampling Bias:** The recruitment process could favor certain types of patients (e.g., those more likely to visit clinics or participate in studies), leaving out others, such as those with less access to healthcare.

It is an anonymized dataset so we can't say accurately.



# Proposed Prediction Model

The proposed model utilizes **machine learning** algorithms to analyze various data inputs, including genetic, lifestyle, and medical history. By identifying **patterns** associated with early Alzheimer's symptoms, we can improve **diagnostic accuracy**.



# Data Source

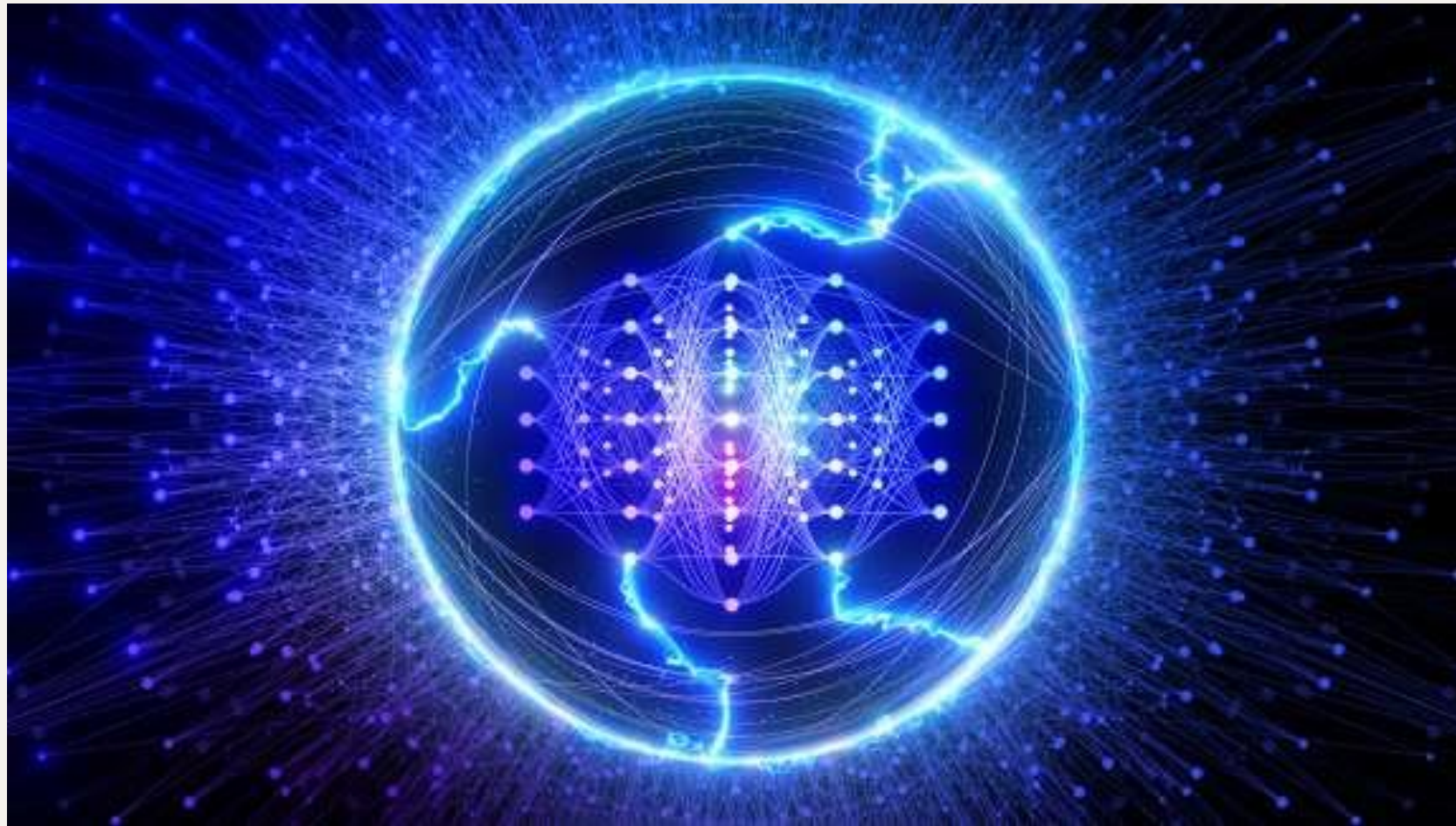
We will utilize the DARWIN dataset, which includes data from 174 participants (89 Alzheimer's patients and 85 healthy individuals) performing memory, dictation, graphic, and copy tasks. The dataset contains metrics such as Air Time, Mean Acceleration, Max X/Y Extension, and Displacement Index, which will serve as features for our model.

<https://archive.ics.uci.edu/dataset/732/darwin>





# Machine Learning Models



## 1.Support Vector Machine (SVM):

- SVM will be used to classify whether a participant is likely to have Alzheimer's based on the derived metrics.
- We will employ both linear and non-linear kernels to determine the optimal decision boundary for separating Alzheimer's patients from healthy individuals.

## 2.Linear Regression:

- Linear Regression will be used to predict the severity or progression rate of Alzheimer's in patients.
- This model will focus on identifying a continuous progression score based on the quantitative handwriting features.



By implementing this prediction model, we anticipate improved **early detection rates** of Alzheimer's disease, leading to timely interventions. Enhanced awareness and education about **symptoms** can further support patients and families in navigating this challenging journey.





# Conclusion and Future Directions

In conclusion, enhancing early detection of Alzheimer's through our proposed prediction model holds significant promise.



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# Thanks!

Do you have any questions?

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