

Synthetic Health Data  
Hackathon 2020



# Alzheimer's MRI Image Analysis

Team Aryubia

# PRESENTATION CONTENTS

**01**

**Exploratory Data Analysis**

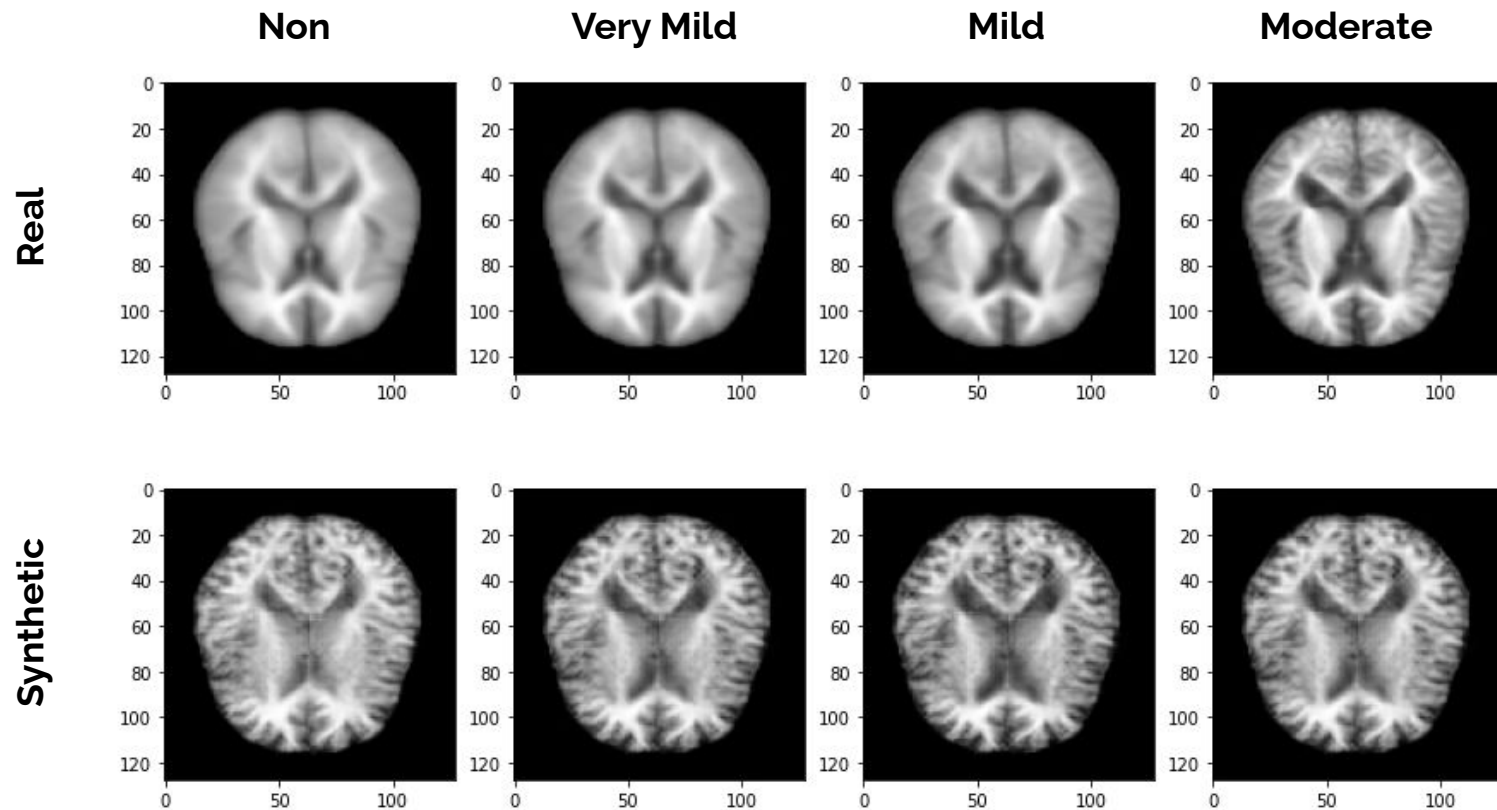
**02**

**Building the DL model**

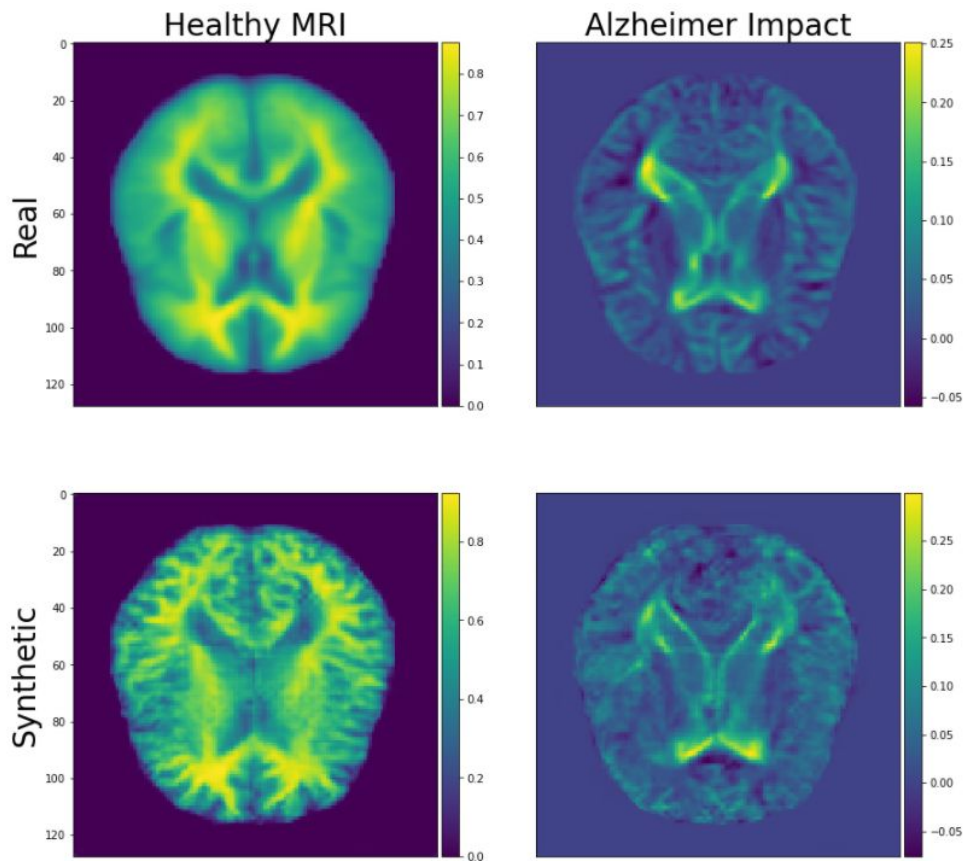
**03**

**Evaluation & Conclusion**

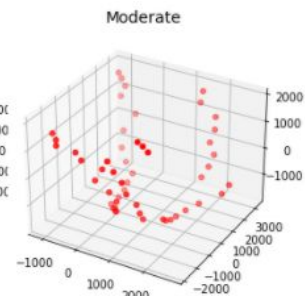
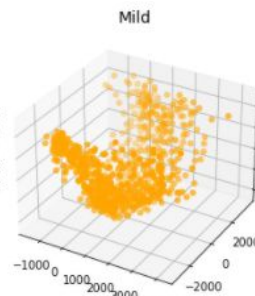
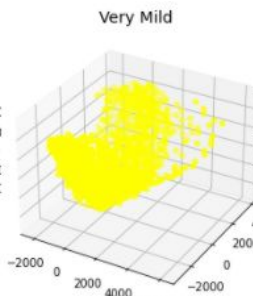
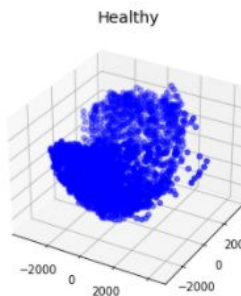
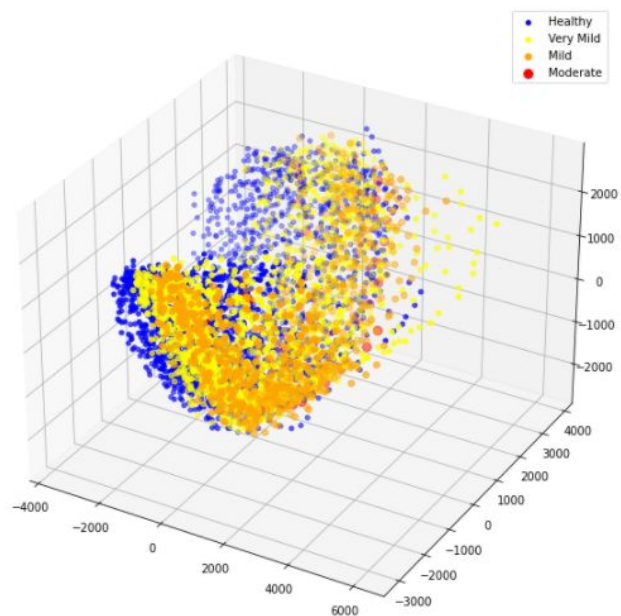
# Exploratory Data Analysis (1)



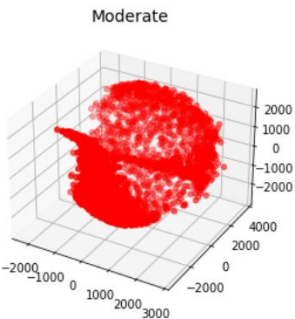
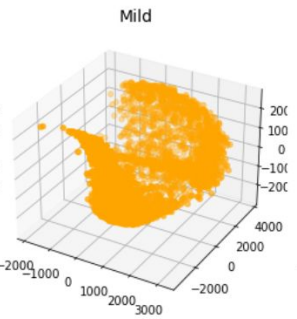
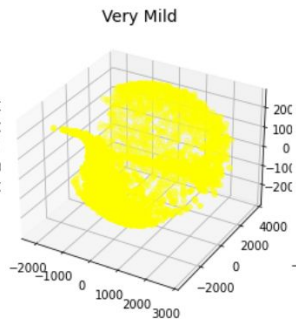
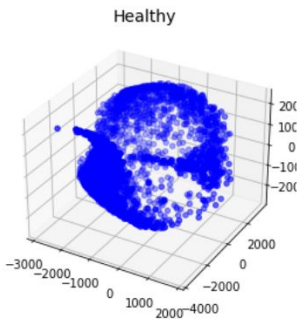
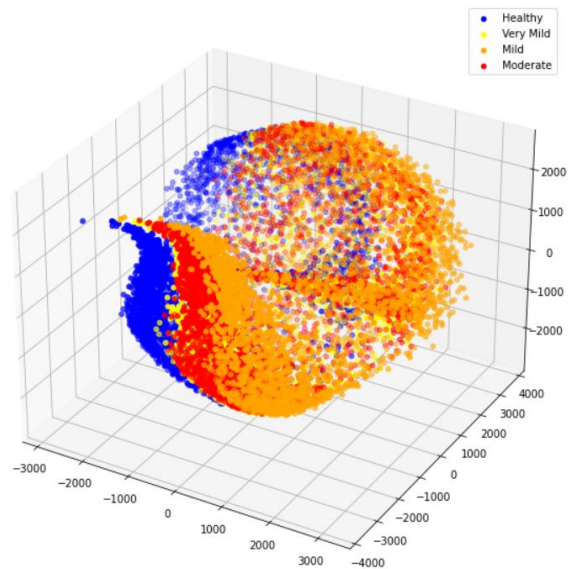
# Exploratory Data Analysis (2)



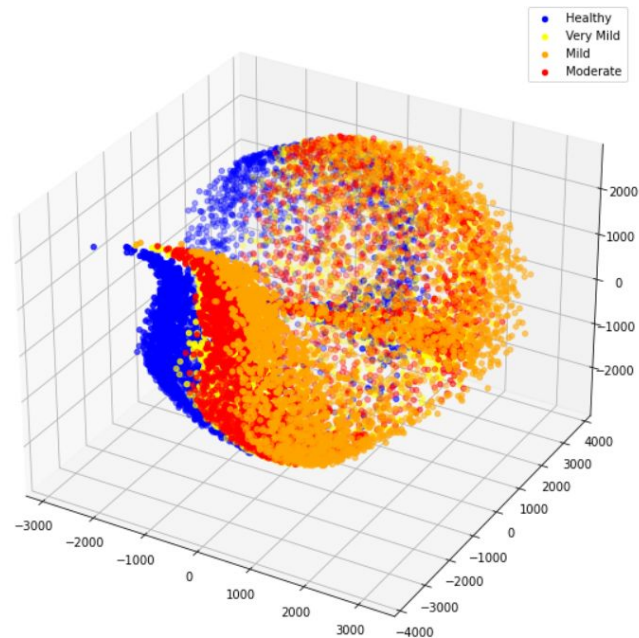
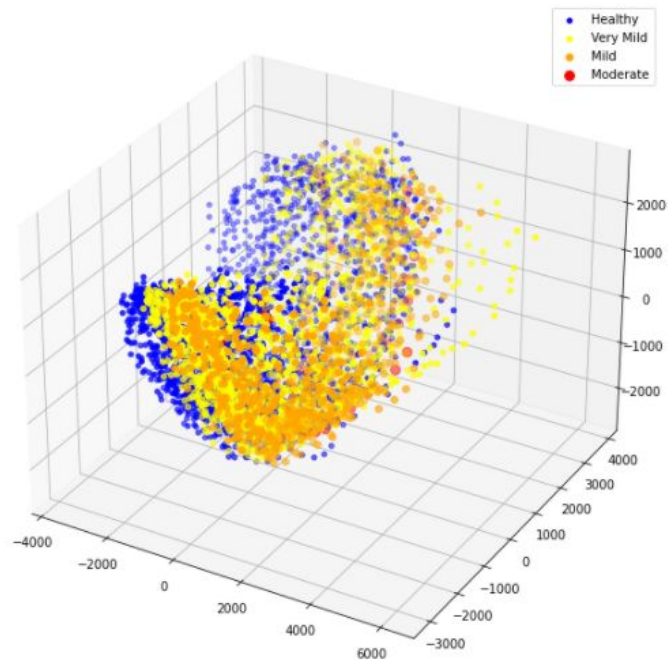
# Real Data Distribution



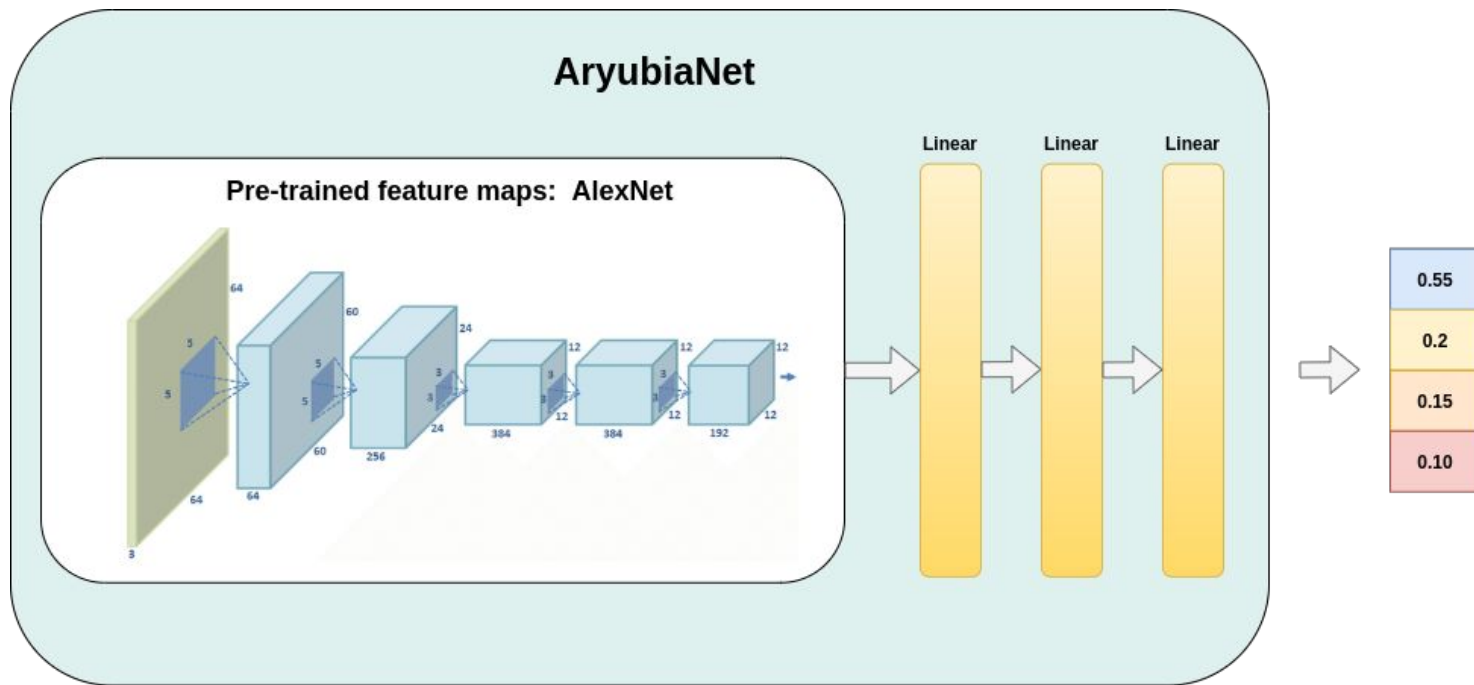
# Synthetic Data Distribution



# Real vs Synthetic Data



# Making of AryubiaNet





# Training Objectives & Evaluation

Training Set 1: Real MRI Dataset



**57.76% accuracy**

Training Set 2: Real+Synthetic MRI Dataset



**60.33% accuracy**

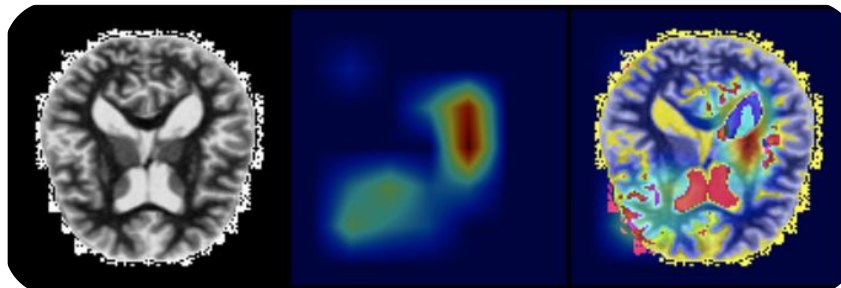
Test Set: Real MRI Dataset V.2

**Non - 640, Very Mild - 448, Mild - 179, Moderate - 12**

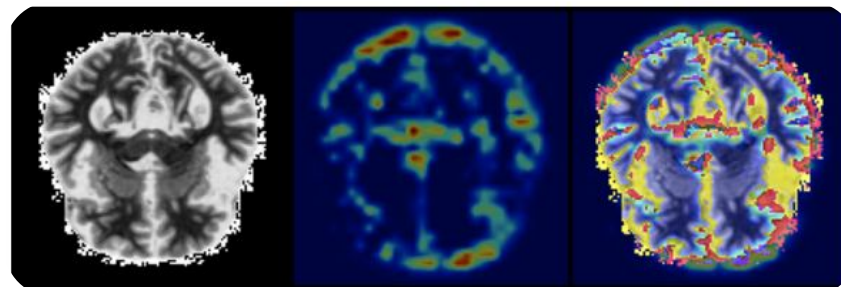


# Grad-Cam and AryubiaNet

Healthy case



Moderate case



# Conclusions

## Medical domain

- ★ AI can be a helping hand in assisting medical experts by providing ways for deeper analysis and finding accurate patterns in health data

## Industrial Research

- ★ Synthetic data can enhance and accelerate the Research to Production pipeline
- ★ They can fill in gaps in cases where enough data are not available

## Ethics

- ★ Anonymity provided by Synthetic data can bypass sensitive social issues

# ARYUBIA team



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ML NLP Researcher



**Arya**

Break Scheduler

# **THANK YOU FOR YOUR ATTENTION!**

Do you have any questions?