



## Case Study 3

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# \*Detecting Epileptic Seizures From EEG Data

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Presented by  
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\*Data Provided by Dr. Rachel Bergstrom



# Presentation Agenda



Today's Topics



Background >

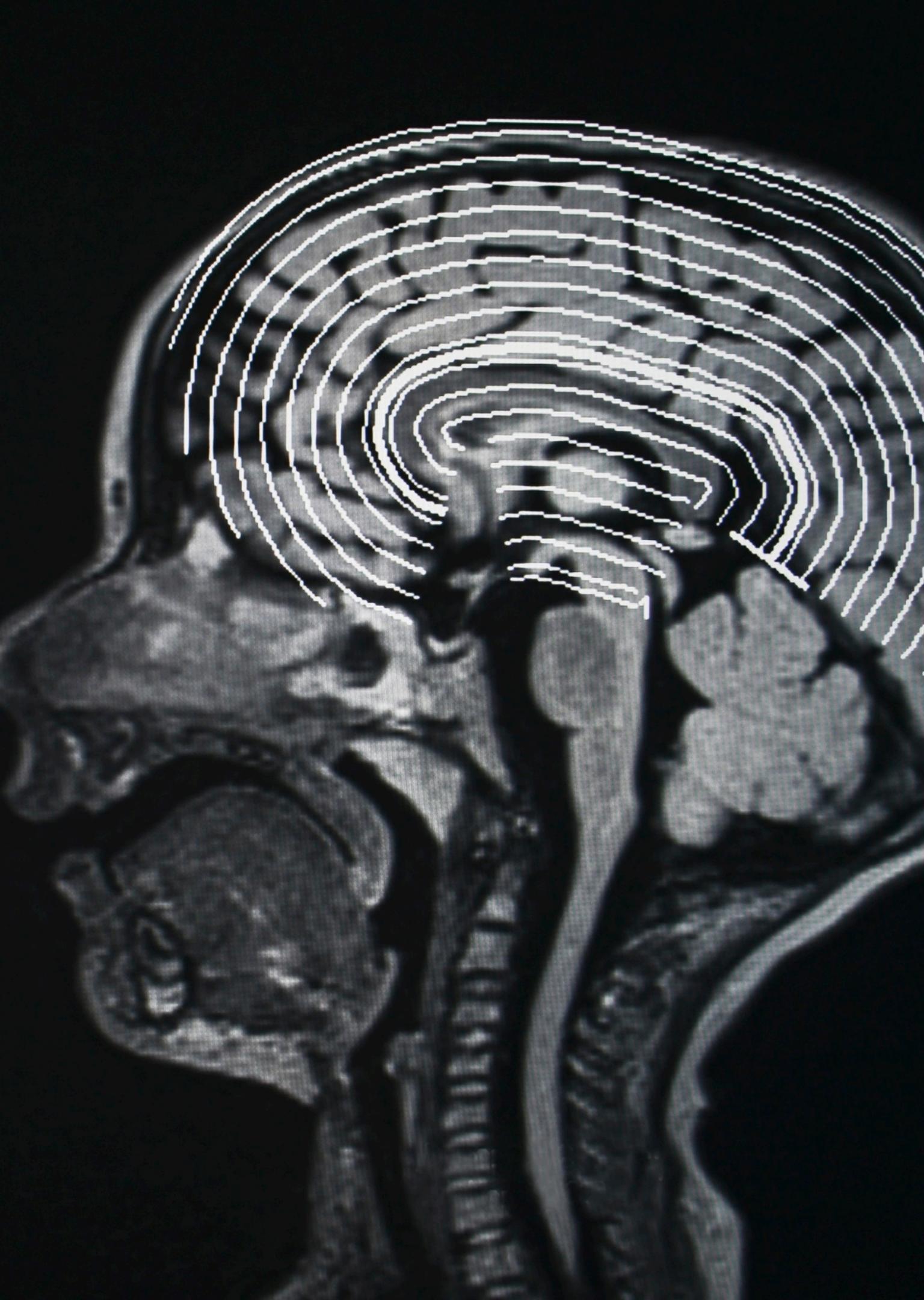
Data Exploration & Preprocessing >

Model Building >

Results >

Conclusion >





INTRO

# Background

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All about our case study !

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# Data Exploration & Preprocessing

- Explore datasets
- Select Datasets (Long or Short)
- Normalization of data
- Preprocessing: Segmented EEG signals into 1-second windows, addressed data uniformity issues, and prepared the dataset for feature extraction and model training.
- Converted csv. to excel
- Signal quality: Note observations on noise, variability, or other characteristics in the subsets.

A photograph of a ledger page from a notebook. The page contains numerous handwritten numerical entries in blue ink, organized into columns and rows, typical of financial record-keeping.

# Model Building

## ● ○ ○ Feature Engineering

Why did we not pursue this model ahead?

Chebyshev Filtration / (60hertz)

Normalization of Signals (Why)

## ● ● ○ Machine Learning

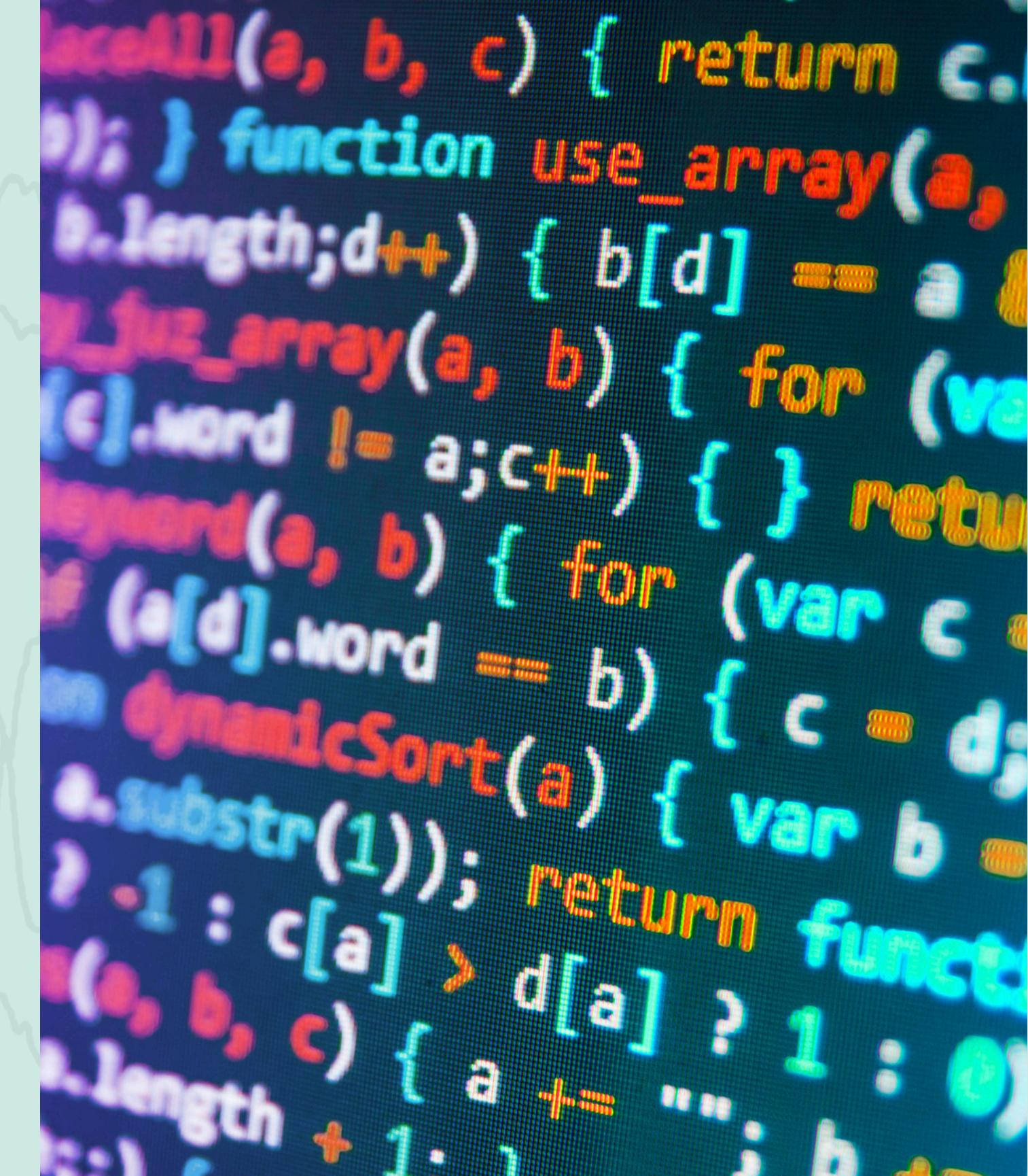
Random Forest (Not Preferred)

## ● ● ● CNN Model

### (Preferred)

Convolutional neural network

Spectrogram



```
function(a, b, c) { return c;
b); } function use_array(a,
b.length;d++) { b[d] = a;
fill_array(a, b) { for (var
c.length != a;c++) {} } return
a; compare(a, b) { for (var c =
0; c < a.length; c++) if (a[c].word ==
b[c].word) { c++; } else { return
false; } } dynamicSort(a) { var b =
a; substr(1)); -1 : c[a] > d[a] ? 1 : 0;
for (a, b, c) { a += "" ; b += "" ;
c += "" ; } return function(a, b) {
a.length + 1 - 1 : 0;
b.length + 1 - 1 : 0;
c.length + 1 - 1 : 0;
} } }
```





Results →

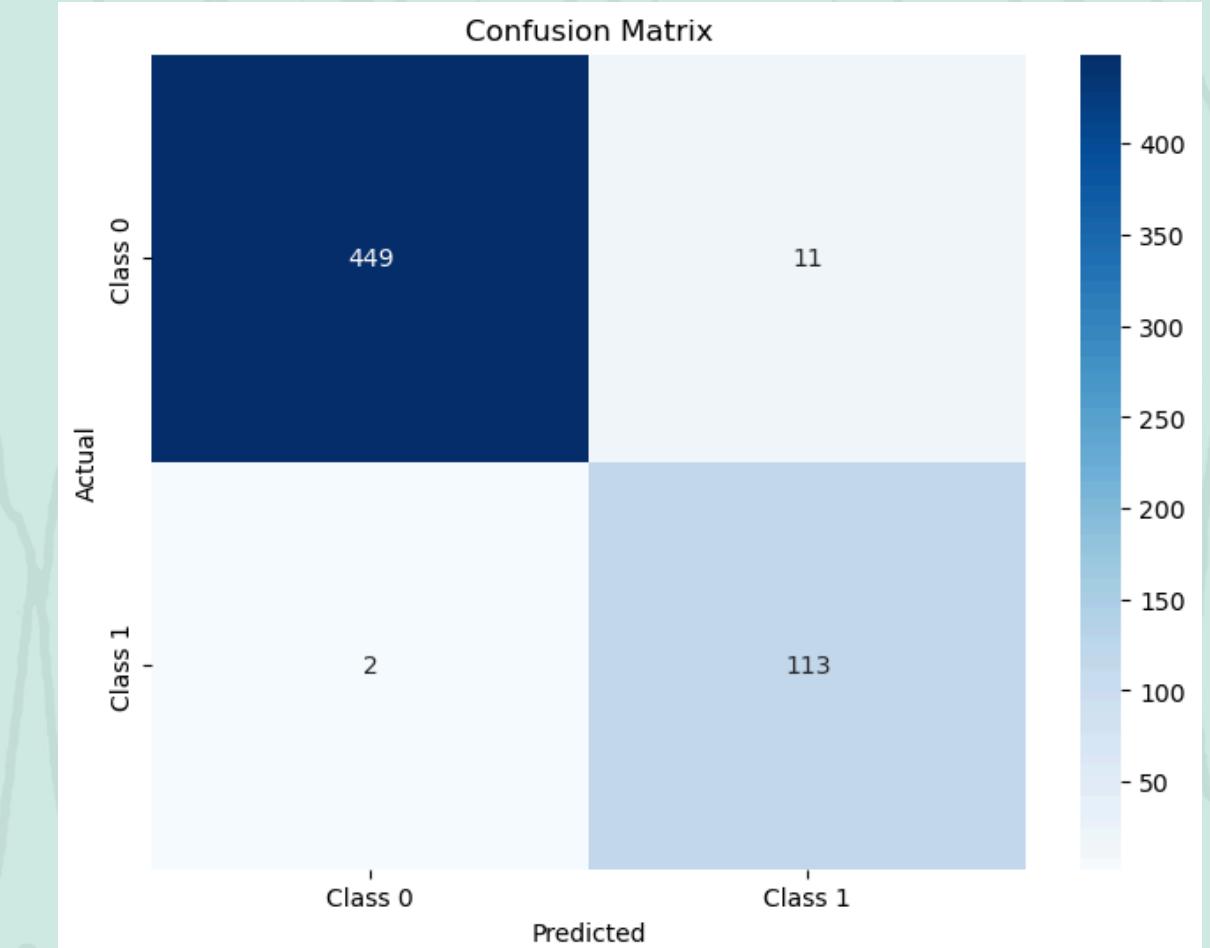


“Why CNN (Convolutional neural network)  
model is successful and reliable to use”



## Results

	precision	recall	f1-score	support
0	1.00	0.98	0.99	460
1	0.91	0.98	0.95	115
accuracy				575
macro avg	0.95	0.98	0.97	575
weighted avg	0.98	0.98	0.98	575





# Conclusion

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## 01. MISTAKES

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- SIGNAL QUALITY

## 02. CHALLENGES

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- LITERATURE REVIEW
- UNDERSTANDING OF ACTUAL EEG

## 03. FUTURE DIRECTIONS

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- FEATURE ENGINEERING
- BUILD PREDICTION MODELS
- NOISY DATA

Mochchakkeram  
**Asante**

Arigato obrigado

Dank Je

Mochchakkeram  
Mafur NUWUN

Matondo

Dankon  
obrigado

Mochchakkeram Multumesc

Spasibo

Spasibo

obrigado  
Welalim

Spasibo

Terma Kasih

Grazie Nirringazzjak

**Multumesc**

Kiitos Raibh Maith Agat

Chokrane

Kiitos Grazie

Maake

**Thank You**

Merci

Juspaxay

Nirringazzjak

Salamat

Kia Ora

Kia ora

Matondo

Salamat

Vinaka

Mamana

Kiitos

Dankon

obrigado

Grazie

Mochchakkeram

Ua Tsaug Rau Koj

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Maake

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Chokrane

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