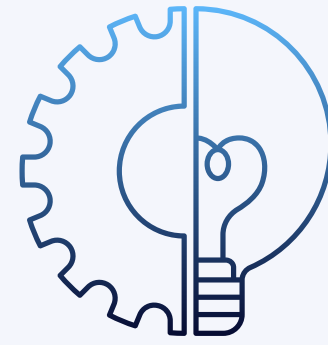


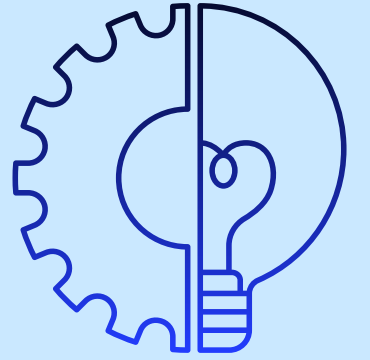


# Speech Recognition

**Paritosh Joshi**  
**CH.EN.U4CSE20149**



# What it does?



**Hear speech in real time**



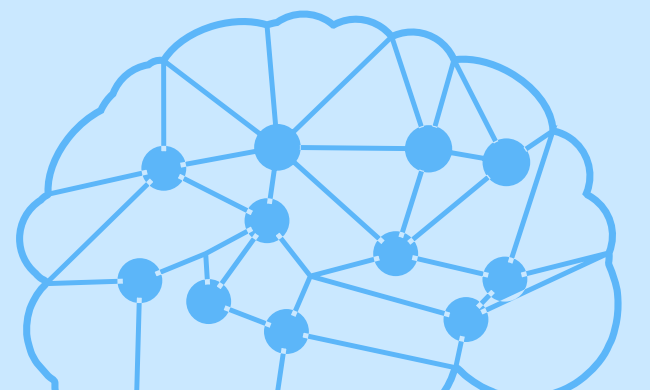
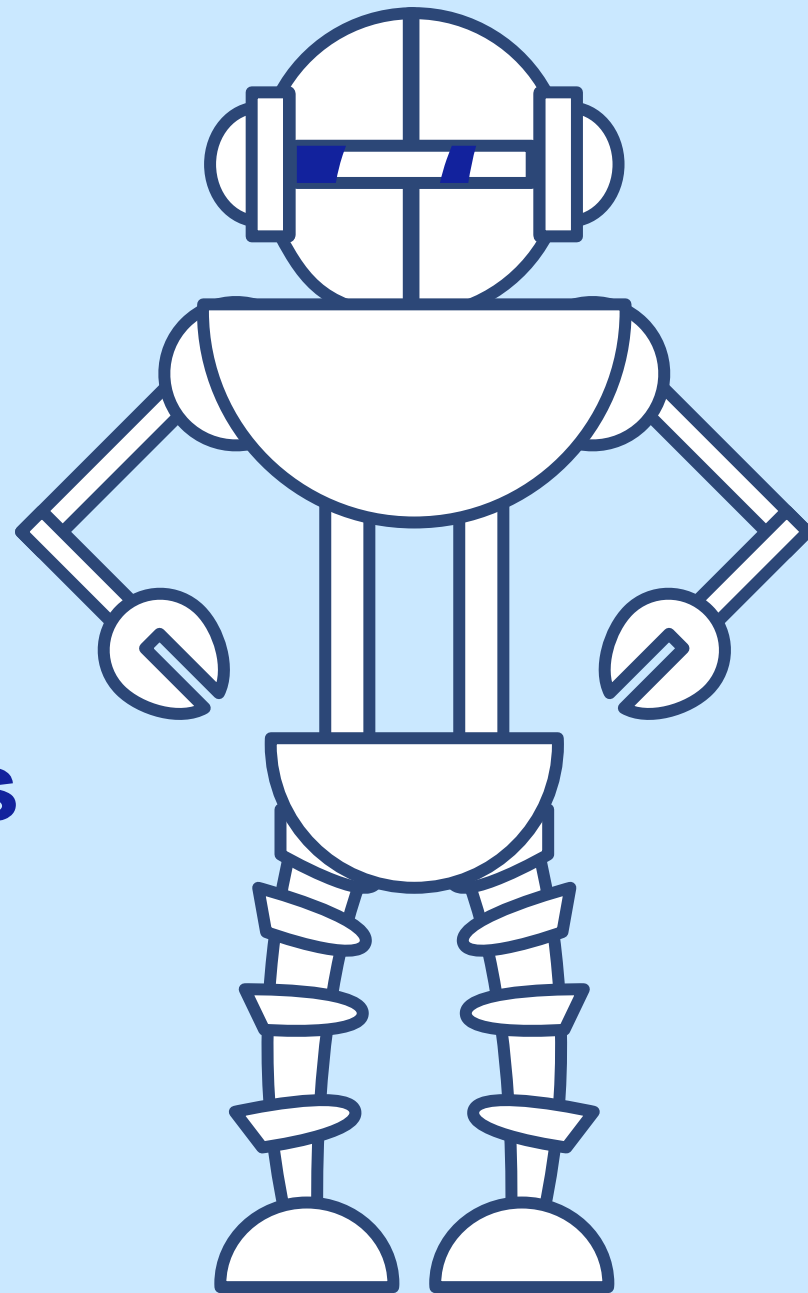
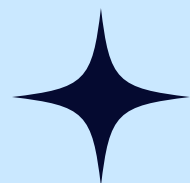
**Analyze**



**Execute commands**



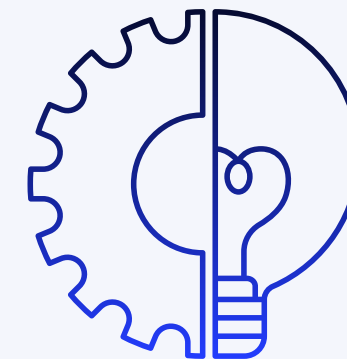
**Emotion detection**







# Literature Survey

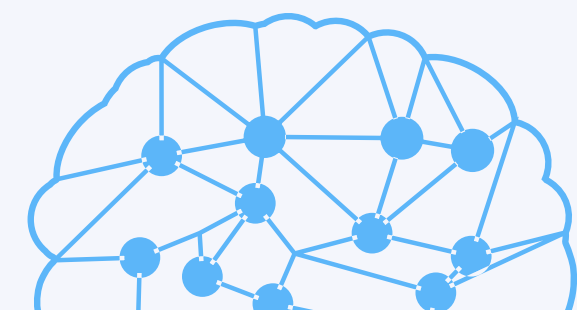


**01**

Automatic depression recognition by speech signal processing

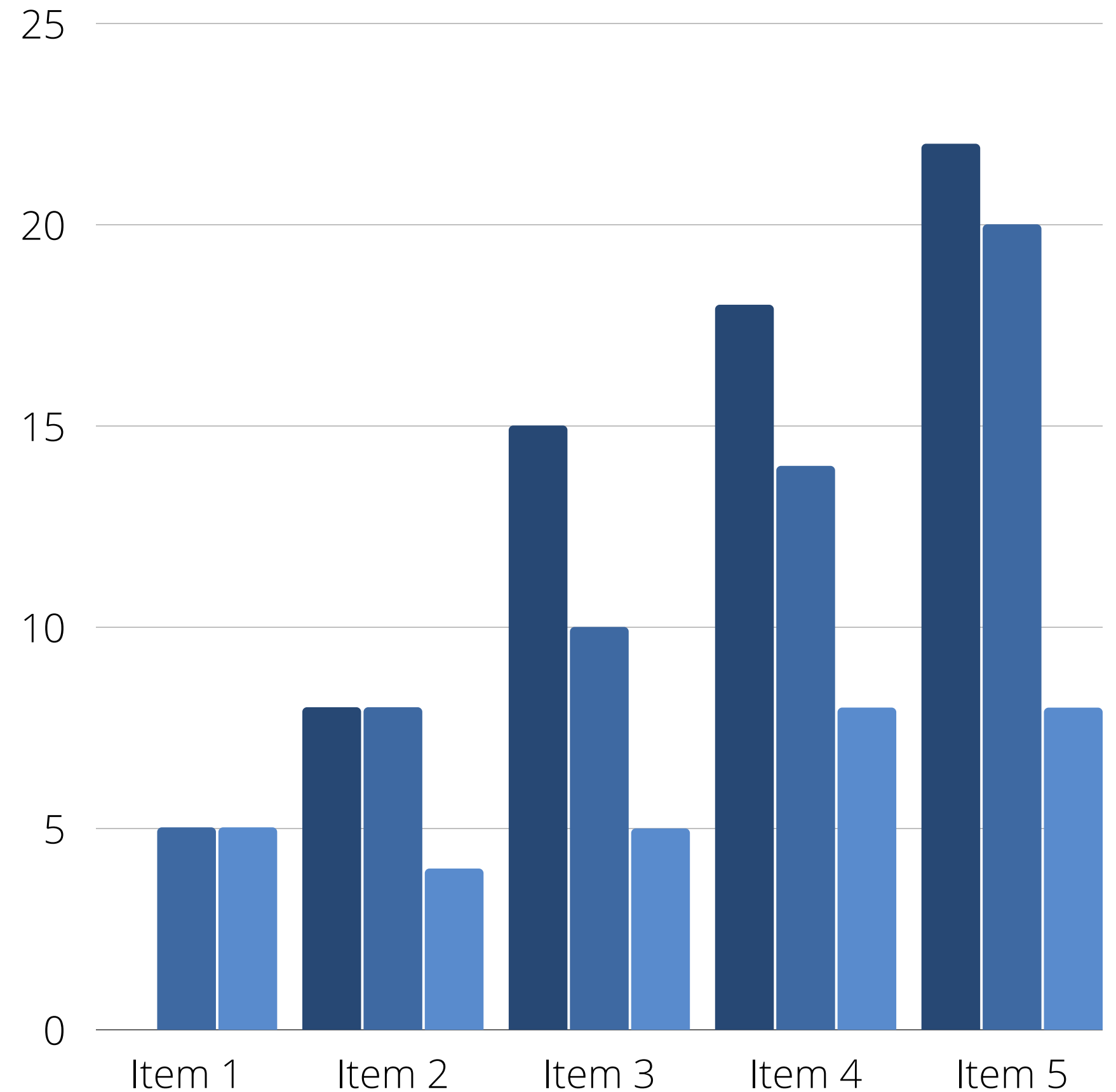
**02**

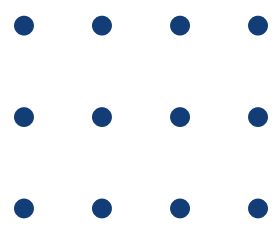
Challenges of speech recognition for Bengali language



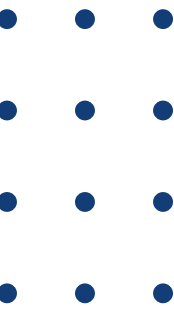
# Data Set

- Crowd Sourced Emotional Multimodal Actors Dataset (CREMA-D)
- 7000+ audio clips
- Source - *Kaggle*





# To-do with Data-Set...



Steps to be followed while working with the Data-Set

## Preprocessing

- Load libraries
- General analysis of audio files
- EDA on data

1

## Visualize Data

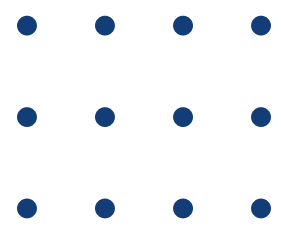
- Seaborn
- Wave plot
- Spectrogram

2

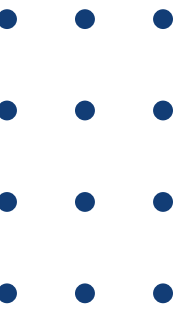
## Feature Extraction

- Zero Crossing Rate
- Chroma STFT
- MFCC
- Root Mean Square Energy

3



# To-do with Data-Set...



Steps to be followed while working with the Data-Set

## Train-Test Split

- Split dataset into Training & Testing sets
- Get dimensions of splitted sets

4

## Training

- Supervised Learning
- CNN
- Model Fitting
  - Epochs = 5, 10, ...
  - Batch Size = 32, 64

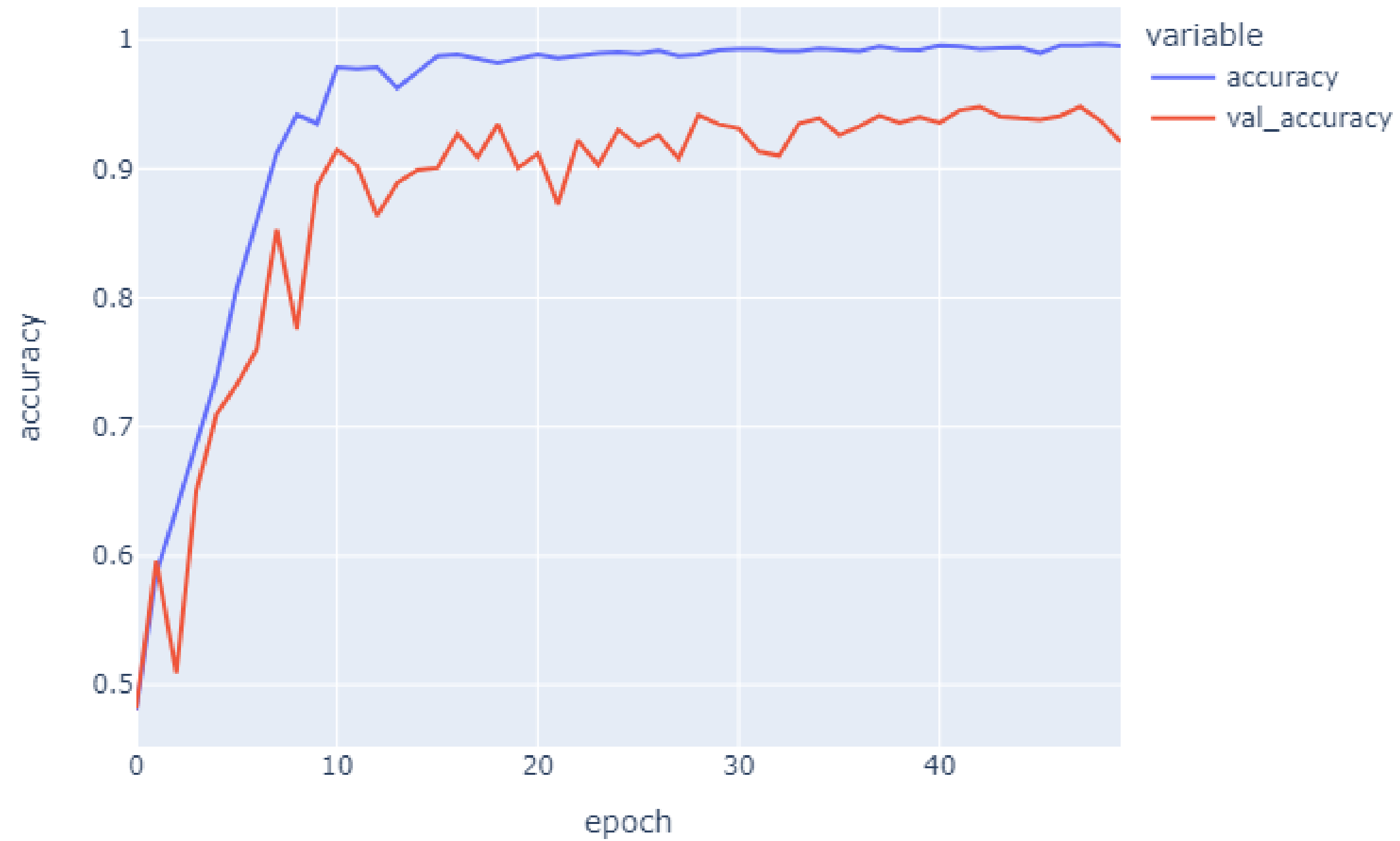
5

## Model Evaluation

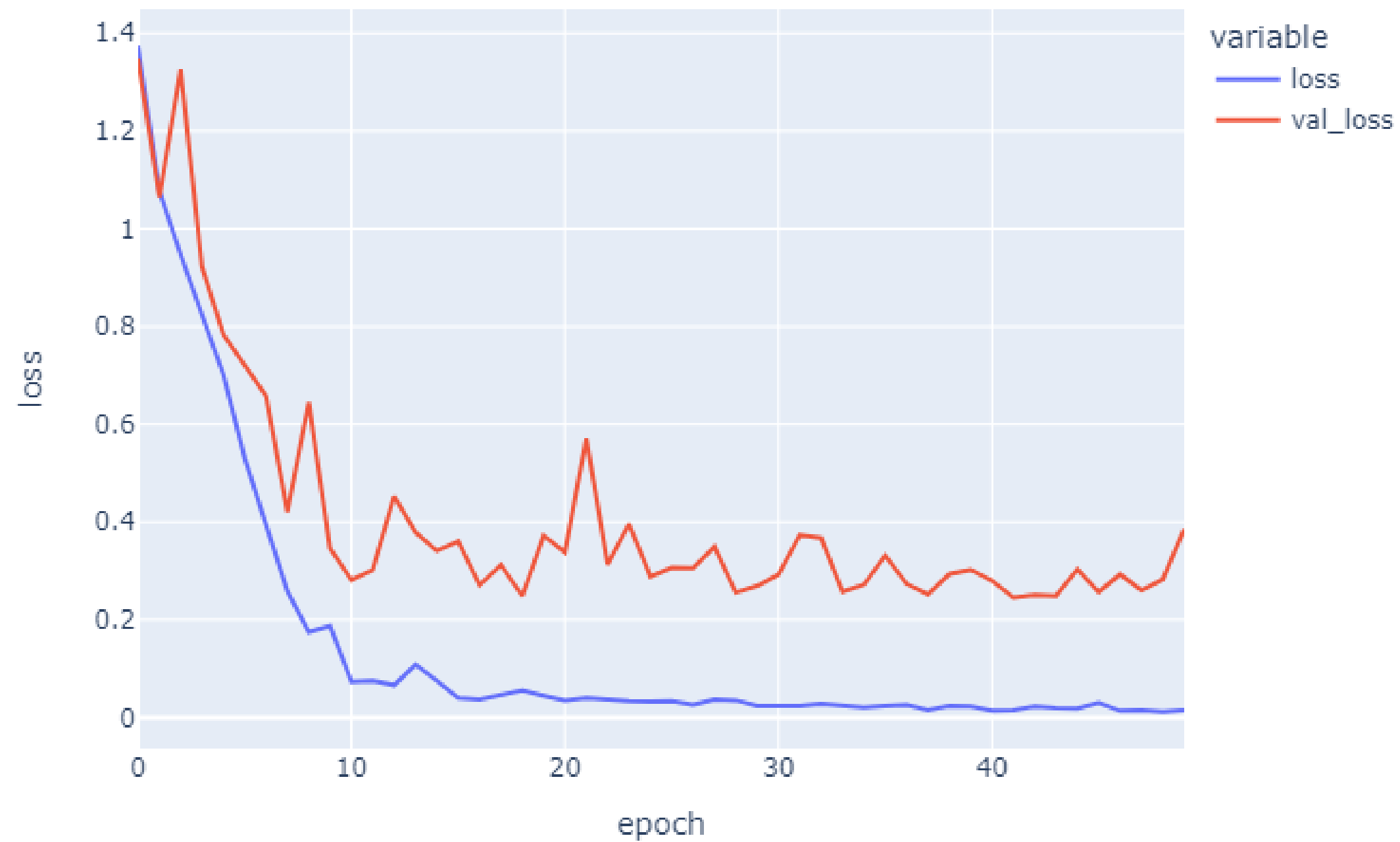
- Confusion Matrix
- Accuracy
- Precision
- Recall
- F1 Score

6

# Accuracy Curve

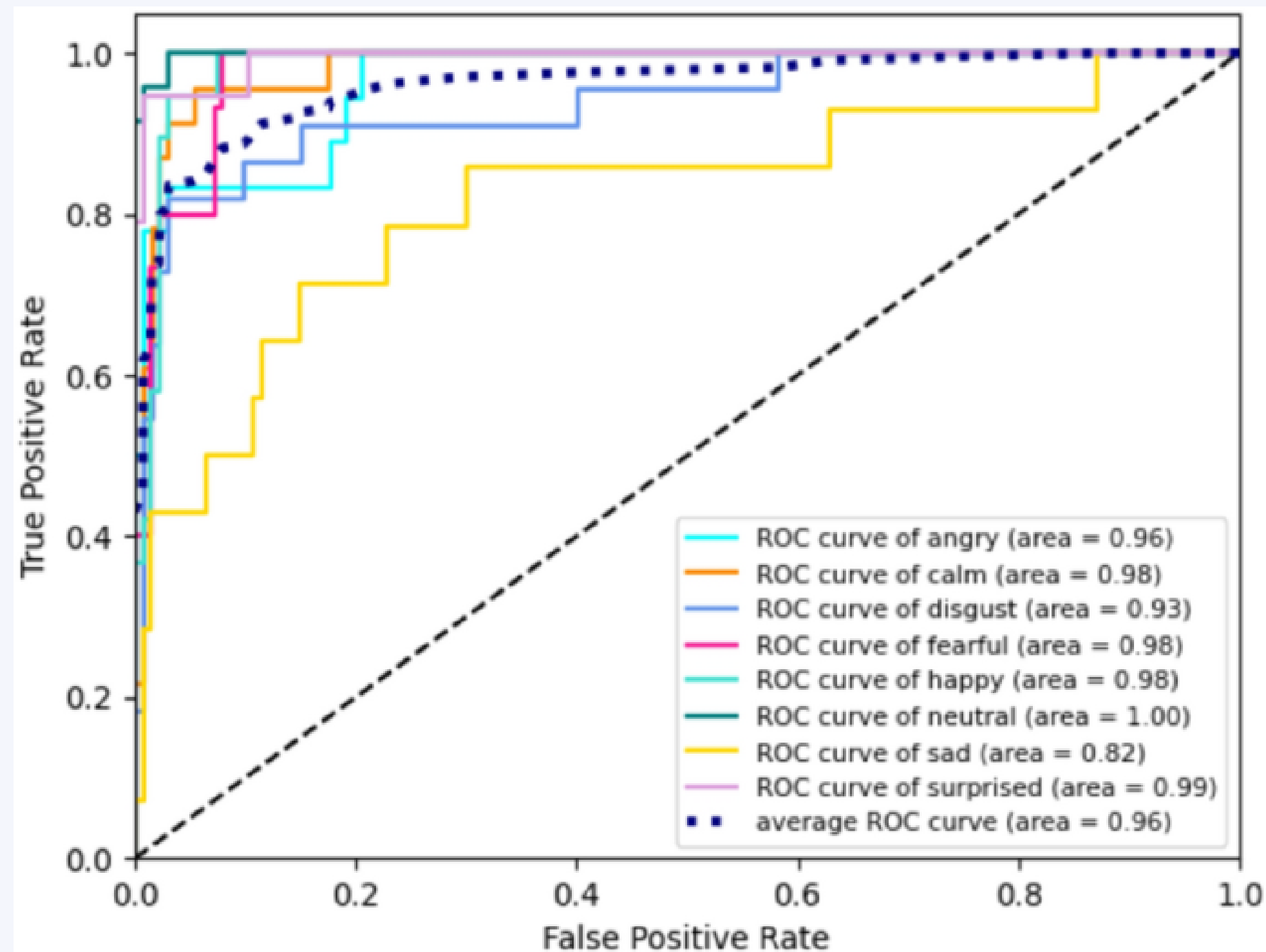


# Loss Curve

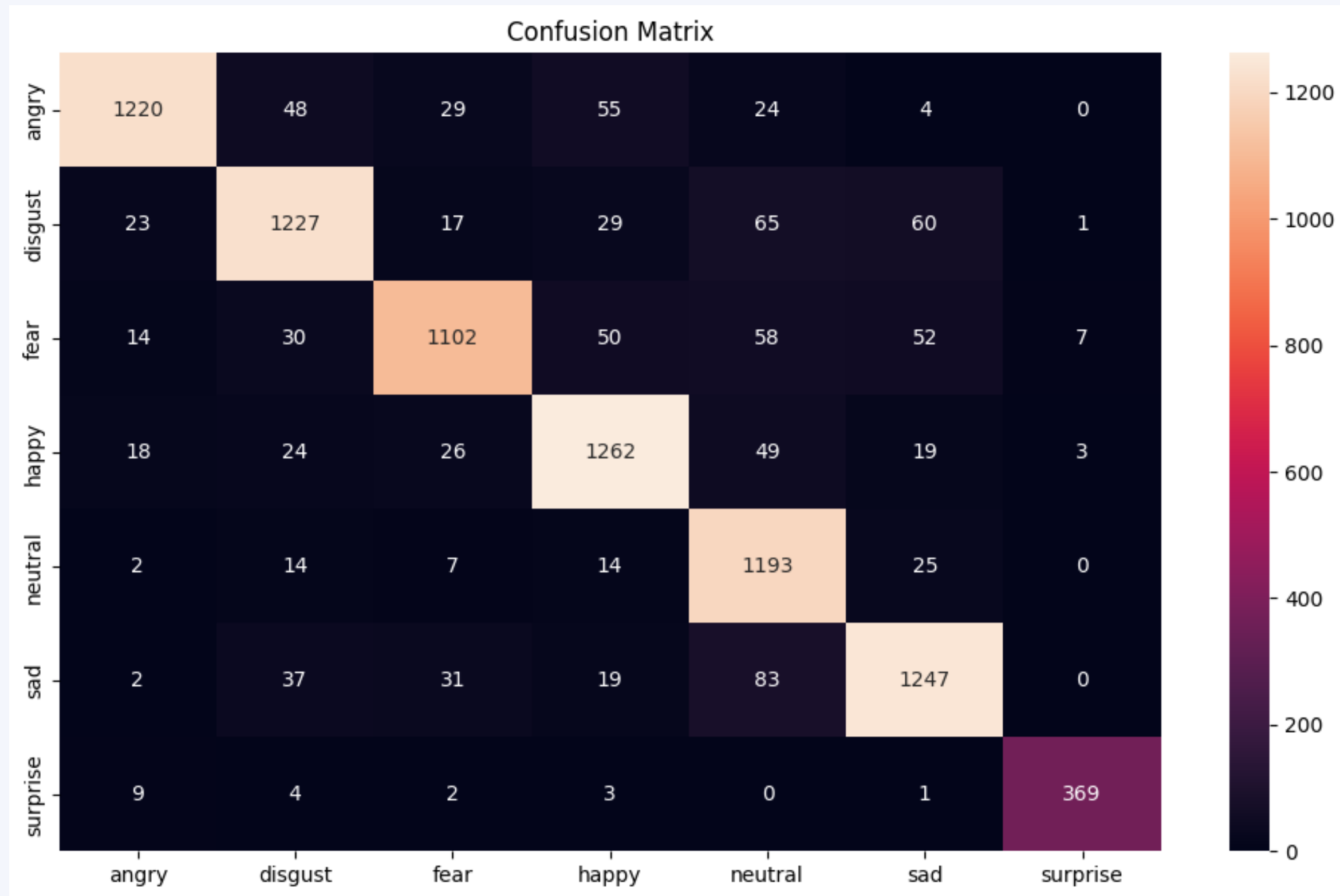




# ROC Curve



# Confusion Matrix



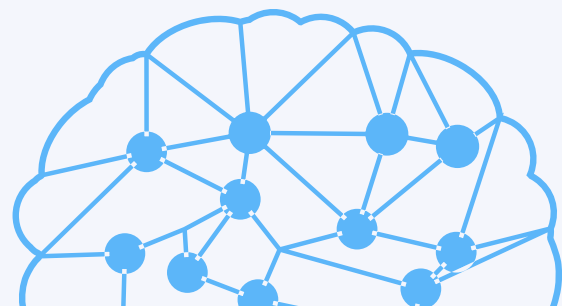


# Precision, Recall, F1 Score

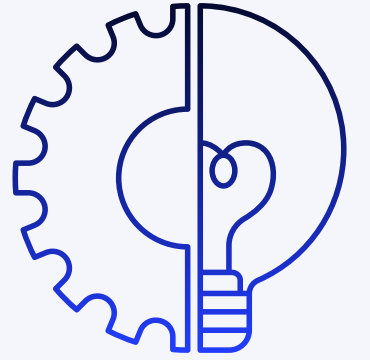


## Confusion Matrix

	precision	recall	f1-score	support
angry	0.95	0.88	0.91	1380
disgust	0.89	0.86	0.87	1422
fear	0.91	0.84	0.87	1313
happy	0.88	0.90	0.89	1401
neutral	0.81	0.95	0.87	1255
sad	0.89	0.88	0.88	1419
surprise	0.97	0.95	0.96	388
accuracy			0.89	8578
macro avg	0.90	0.90	0.90	8578
weighted avg	0.89	0.89	0.89	8578



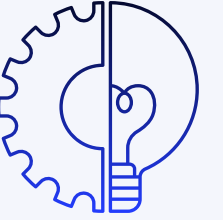
# What are the Future Plans?



■ **Gender Classification**

■ **Depression Detection**





**Thank You**

