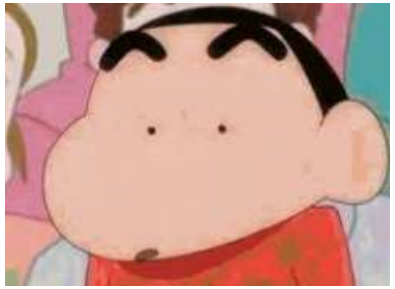
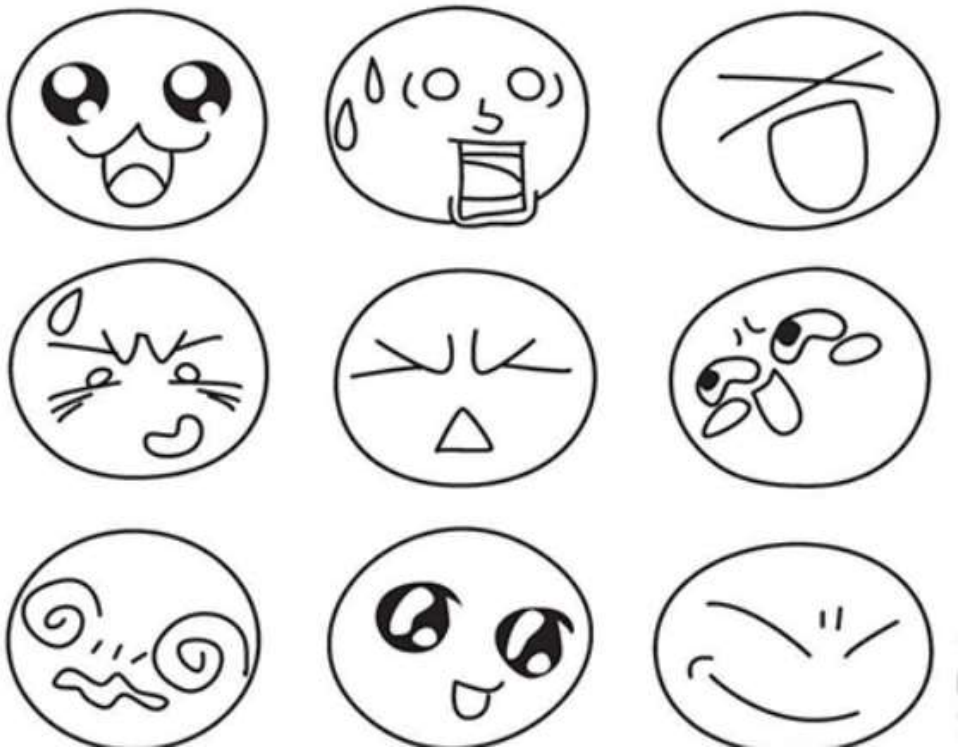
Emotion Detection

Group 3

Jinxiao Du
Tram Duong
Ziyun Liu
Ran Lu
Kexin(Collen) Su

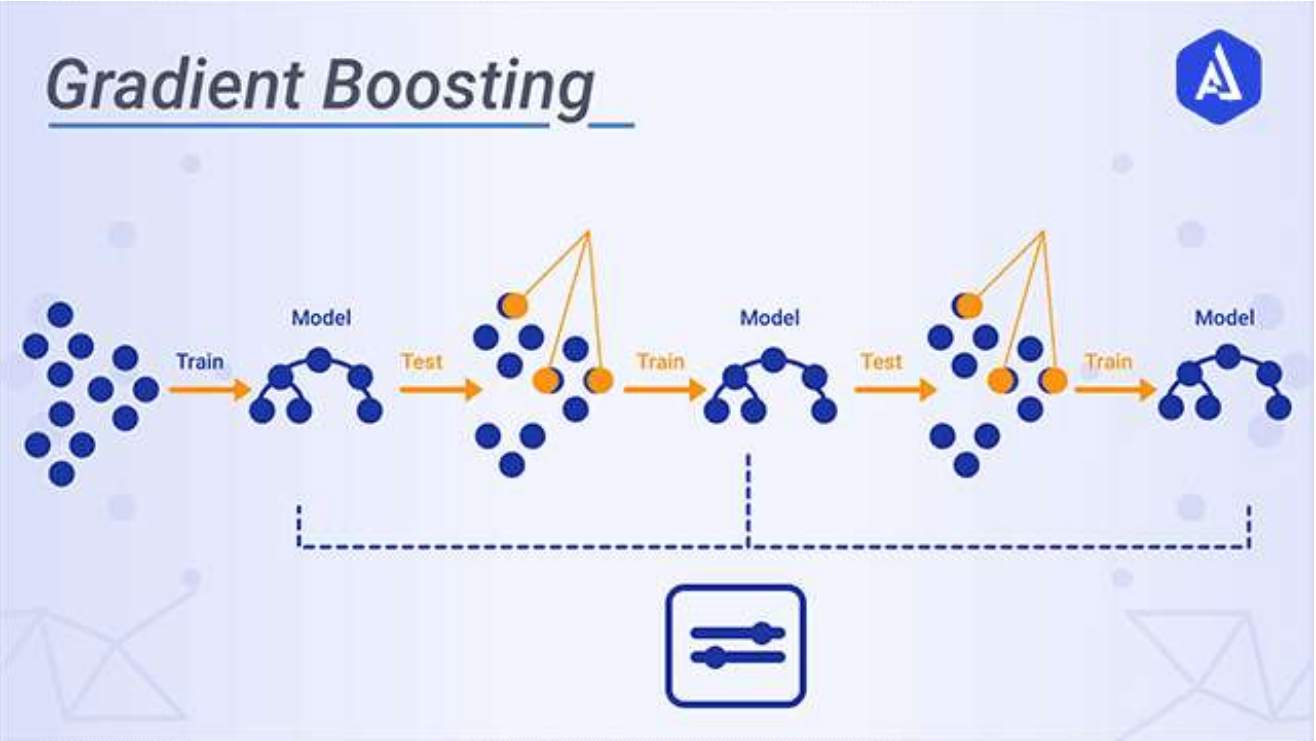




Contents

Baseline Model: GBM

- Test Accuracy: 44.4 %
- Limitations:
  1. Long Time to Train Model
  2. Easy to Overfit

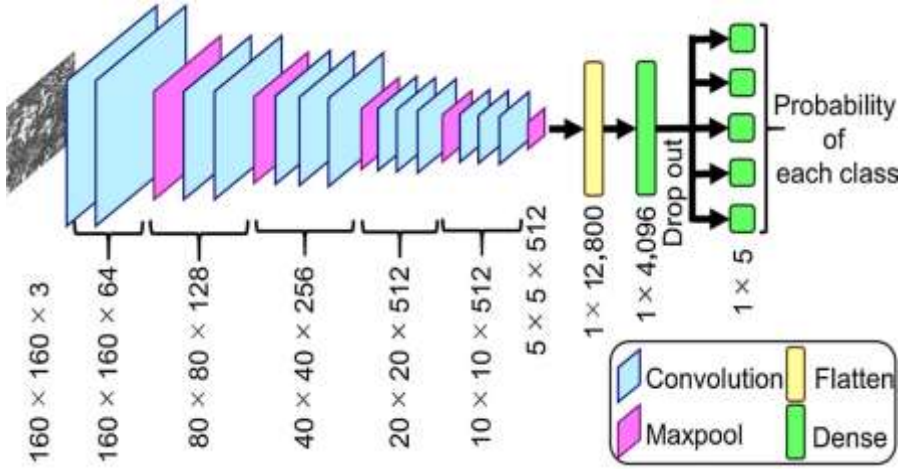


Convolutional Neural Network(CNN)

Layer (type)	Output Shape	Param #
conv1d_6 (Conv1D)	(None, 206, 100)	400
max_pooling1d_3 (MaxPooling1D)	(None, 68, 100)	0
conv1d_7 (Conv1D)	(None, 66, 100)	30100
dropout_9 (Dropout)	(None, 66, 100)	0
flatten_3 (Flatten)	(None, 6600)	0
dropout_10 (Dropout)	(None, 6600)	0
dense_6 (Dense)	(None, 100)	660100
dropout_11 (Dropout)	(None, 100)	0
dense_7 (Dense)	(None, 22)	2222

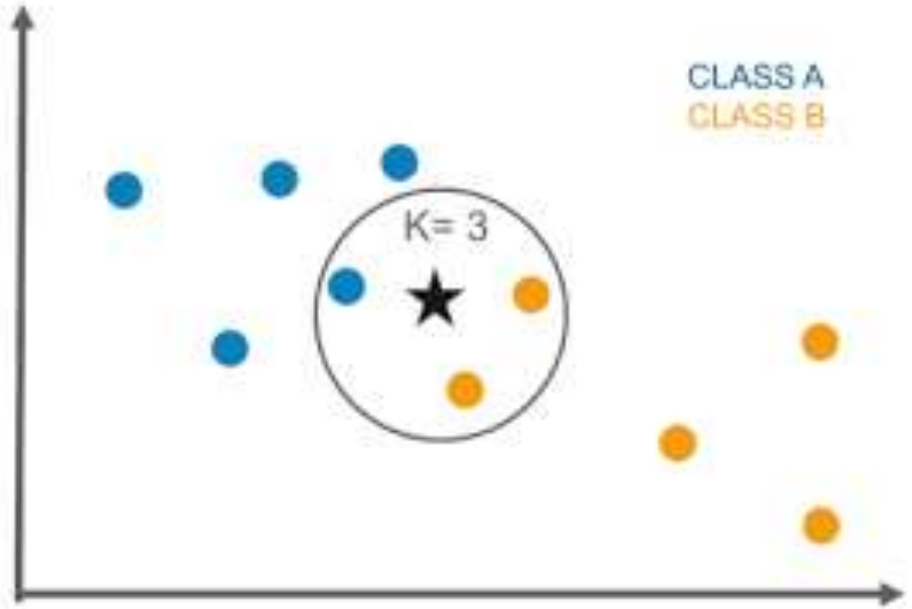
Total params: 692,822
Trainable params: 692,822
Non-trainable params: 0

- Test Accuracy: 46.6 %
- Limitations:
  1. Easy to Overfit



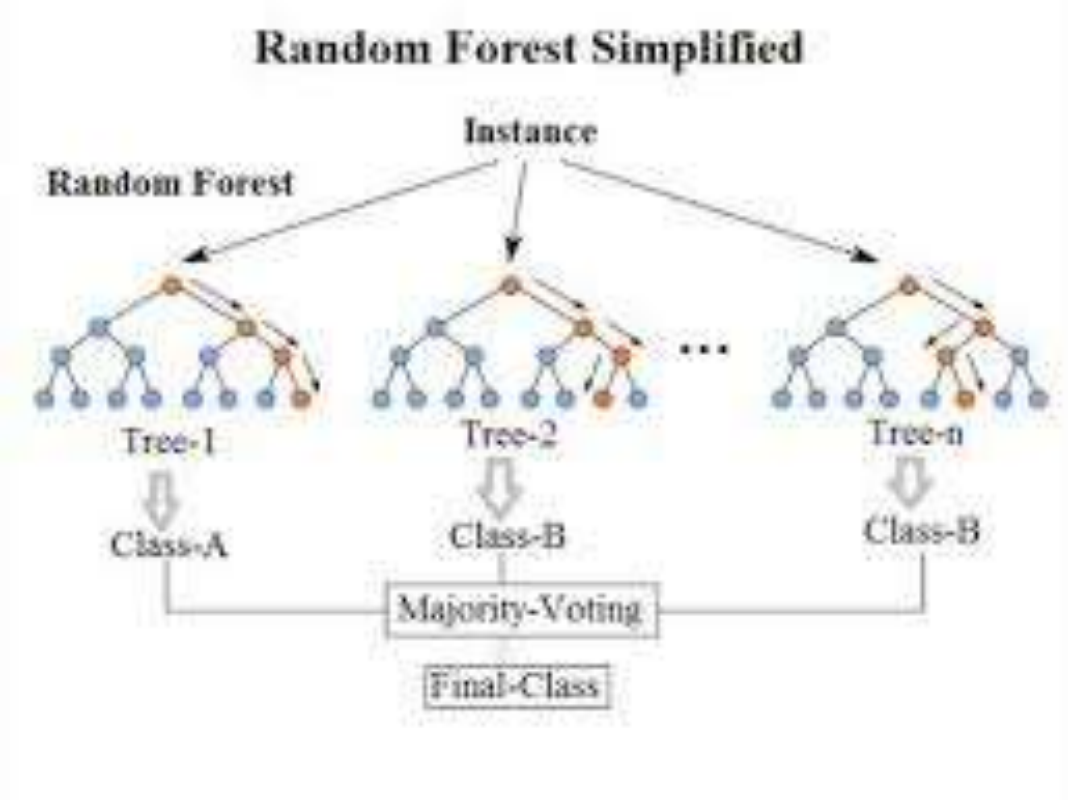
K Nearest Neighbor(KNN)

- Test Accuracy: 38.8%
- Limitations:
  1. Need to tune hyperparameter k
  2. Computation cost is high when dealing with large data



Random Forest

- Test Accuracy: 43.3%
- Limitations:
  1. Need to choose the number of trees
  2. Slow to predict



Advanced Model: SVM

- Test Accuracy: 52.8%
- Advantages:
  1. More effective in high dimensional spaces
  2. Relatively memory efficient
- Comparison:
  1. SVM has higher test accuracy compared with others,
  2. As advanced model, SVM is significantly more accurate than baseline model
  3. SVM has better time consuming