Models and their parameters

1. **Performance Metrics**
   - Accuracy
   - Precision
   - Recall(Sensitivity)
   - F1 Score
   - Confusion Matrix

2. **Plots for Model Comparision**
   - Confusion Matrix
   - ROC Curve
   - Precision Recall Curve
   - Learning Curve
   - Loss Curve
   - Feature Importance Curve(Indicates which electrodes are important)

Why Each Metric and Plot is Important

- **Accuracy** provides a quick overview but might not be enough with imbalanced data.
- **Precision and Recall** give more context on the types of errors, especially if you want to avoid false positives or negatives.
- **F1 Score** is useful if you need a single metric that considers both precision and recall.
- **Precision-Recall Curves** provide a view of model performance over all classification thresholds, helping you select the most balanced approach.
- **Confusion Matrix** allows you to identify specific class-wise errors and adjust accordingly.
- **Learning and Loss Curves** reveal the model's training behavior, guiding regularization adjustments.
- **Feature Importance Plot** highlights the most critical features, which might lead to feature engineering or data collection insights.

3. **Models that work for .csv files**
   - Random Forest
   - Gradient Boosting (XGBoost)
   - Recurrent Neural Network
   - Long Short-Term Memory
   - 1D CNN
   - Generative Adversarial Network
   - Transformer (BERT)

Model	Strengths	Weaknesses
Random Forest	Good baseline, handles structured data well	Limited in capturing temporal dependencies
Gradient Boosting (XGBoost, LightGBM)	Powerful for structured data, handles large datasets well	Limited for time-series data
RNN	Ideal for sequential dependencies	Vanishing gradient issue for long sequences
LSTM	Handles long-term dependencies	Computationally intensive
1D CNN	Captures local features in time-series	Limited in long-term dependencies
GAN	Data augmentation, generates synthetic data	Difficult to train, not a direct classifier
Transformer	Captures long-range dependencies, powerful for sequence tasks	Computationally expensive

4.