Medical ML Model Template:

Why was this ML model made? Why was it necessary to create this model? What does it provide that we do not already have?

Patients with occlusion myocardial infarction (OMI) and no ST-elevation on presenting electrocardiogram (ECG) are increasing in numbers.These patients have a poor prognosis and would benefit from immediate reperfusion therapy, but, currently, there are no accurate tools to

What techniques were used to create this model? Is this model made with Support Vector Machines, Logistic Regression, a Decision Tree, Random Forest, Gradient Boosting, or something else? What is this specific method being used? How does this model address fairness, explainability, and bias?

The random forest method was used.
This method used early stopping to avoid overfitting.
You can see the individual trees and their results for explanability.

How many people were in the study? How big was this dataset? How does it compare to datasets of other models? Is this dataset still growing? Is the training and testing split 80-20 or a different metric?

7,313 Patients were used in the study.
This is the only dataset of it's kind but we are willing to let it grow as new data is recorded.

What were the results of this model? Report using the standard methods described below. Focus on the confusion matrix, recall, precision, and accuracy to create a standardized explanation.

This was in increase in all metrics compared to standard methods
Confusion matrix- TP:3700 FP:100 TN: 3500 FN:13
Recall:99%
Precision:90%
Accuracy:95%

How does this model compare to other nonalgorithmic assessments and existing algorithms? Does this model demonstrate improvement compared to humans and other models?

This is an improvement on current models and can even be comparable to current standards of doctors diagnoses.

Is this a viable method? Is this model a replacement for humans or a supplement? How would this be used as a supplement when with human intervention? Should it be reported with and without human intervention?

This is a viable method to be used a supplement. This can work alongside doctors to ensure all warning signs are seen and investigated. This model doesn't have perfect accuracy, but it can increase the chances of catching the warning signs to save lives.

Standardizing Terminology - for experts as well as novices. These all must be reported at the top of the paper to give a clear understanding of the results of this model.

True Positive (TP): This is an outcome where the model correctly predicts the positive class.

Reported True Positives: 3700

False Positive (FP): Also known as a Type I error, this is an outcome where the model incorrectly predicts the positive class.

Reported False Positives: 100

True Negative (TN): This is an outcome where the model correctly predicts the negative class.

Reported True Negatives: 3500

False Negative (FN): Also known as a Type II error, this is an outcome where the model incorrectly predicts the negative class.

Reported False Negatives: 13

Confusion Matrix: This is used to organize and display the TP, FP, TN, and FT. This is a 2x2 grid with TP on the top left, FP on the top right, FN on the bottom right, and TF on the bottom left.

TP: 3700	FP: 100
FN: 13	TN: 3500

Accuracy: This is the proportion of true results (both true positives and true negatives) among the total number of cases examined. It's calculated as:

Accuracy=(True Positives + True Negatives) / Total Predictions

Reported Accuracy: 95%

Precision: Also known as positive predictive value, this metric is the ratio of true positives to the sum of true and false positives. It's a measure of a classifier's exactness. A low precision indicates a high number of false positives.

Precision=True Positives / (False Positives + True Positives)

Reported Precision: 90%

Recall: Also known as sensitivity, this metric is the ratio of true positives to the sum of true positives and false negatives. It's a measure of a classifier's completeness. A low recall indicates a high number of false negatives.

Recall=True Positives / (False Negatives + True Positives)

Reported Recall: 99%