Fetal Health Project

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INTRODUCTION

- We have made a study about fetal health classification based on many factors like (Baseline Fetal Heart Rate, Number of accelerations per second, Number of fetal movements per second, uterine contractions).

Target

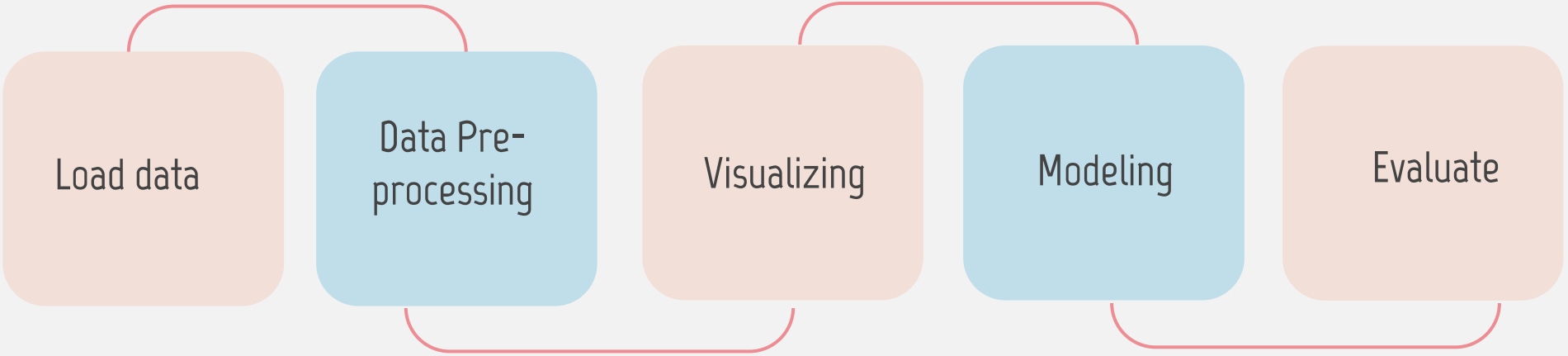
Y

(Fetal health) = Normal
Suspect, Pathological.

X

Features X = 21 columns

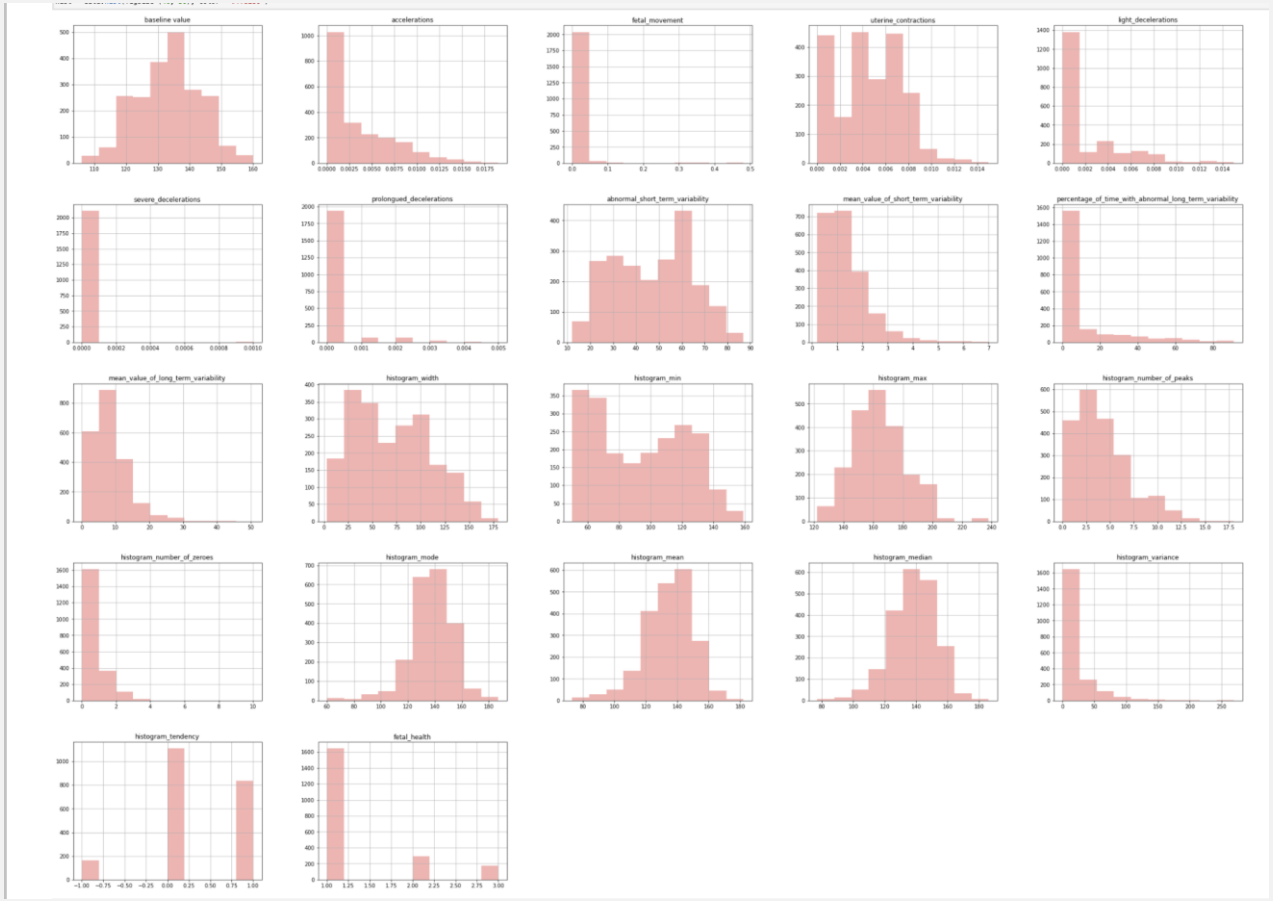
Steps :


Load data
Data Pre-processing
Visualizing
Modeling
Evaluate

Tools :

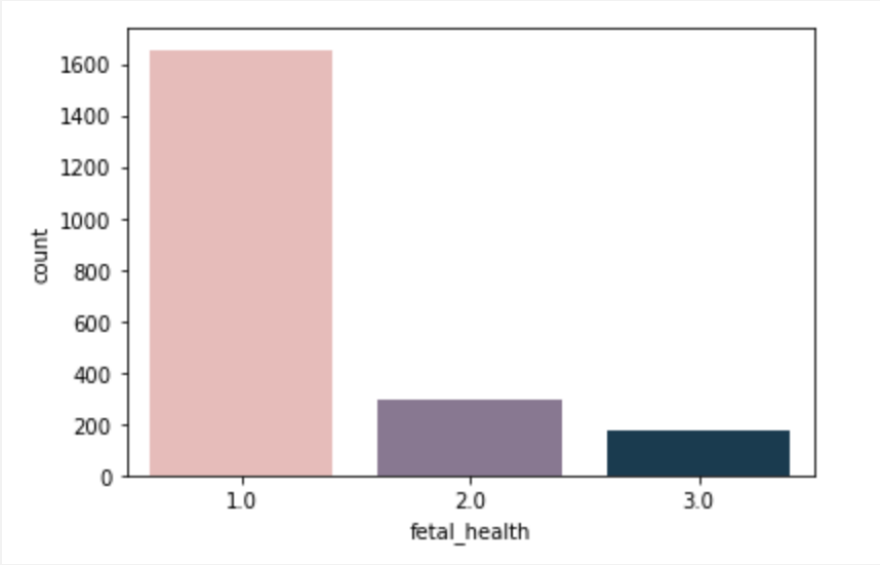
1. Python Libraries
2. Jupyter Notebook

All Columns


baseline value
accelerations
fetal_movement
uterine_contractions
light_decelerations
severe_decelerations
prolongued_decelerations
abnormal_short_term_variability
mean_value_of_short_term_variability
percentage_of_time_with_abnormal_long_term_variability
mean_value_of_long_term_variability
histogram_width
histogram_min
histogram_max
histogram_number_of_peaks
histogram_number_of_zeroes
histogram_mode
histogram_mean
histogram_median
histogram_variance
histogram_tendency
fetal_health

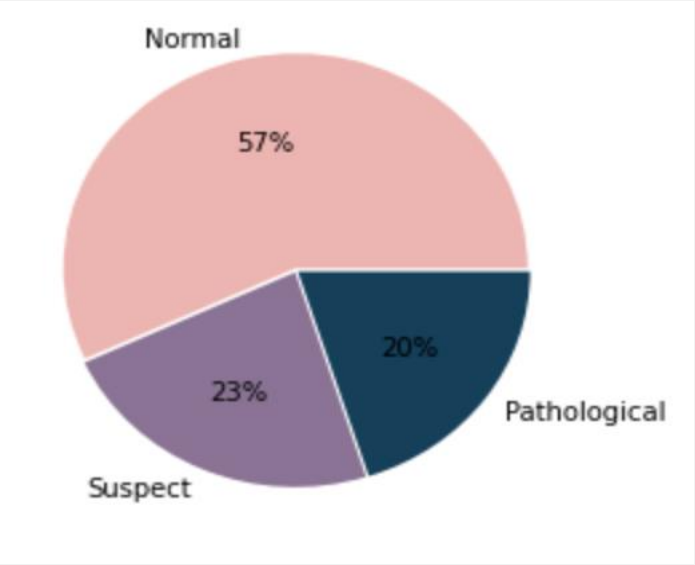
1

The Target "fetal health"

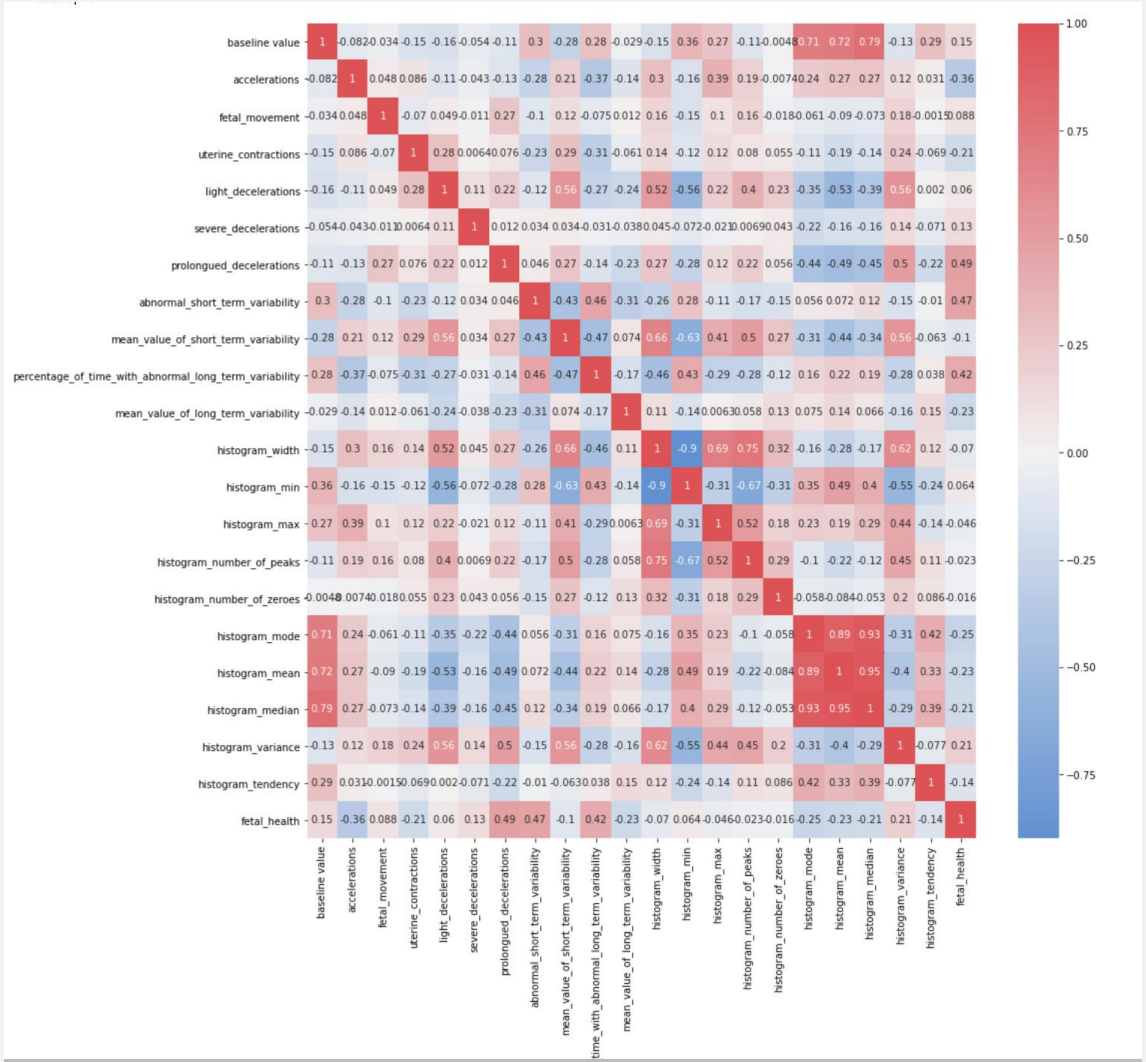


2

Pie Chart of Fetal Heath

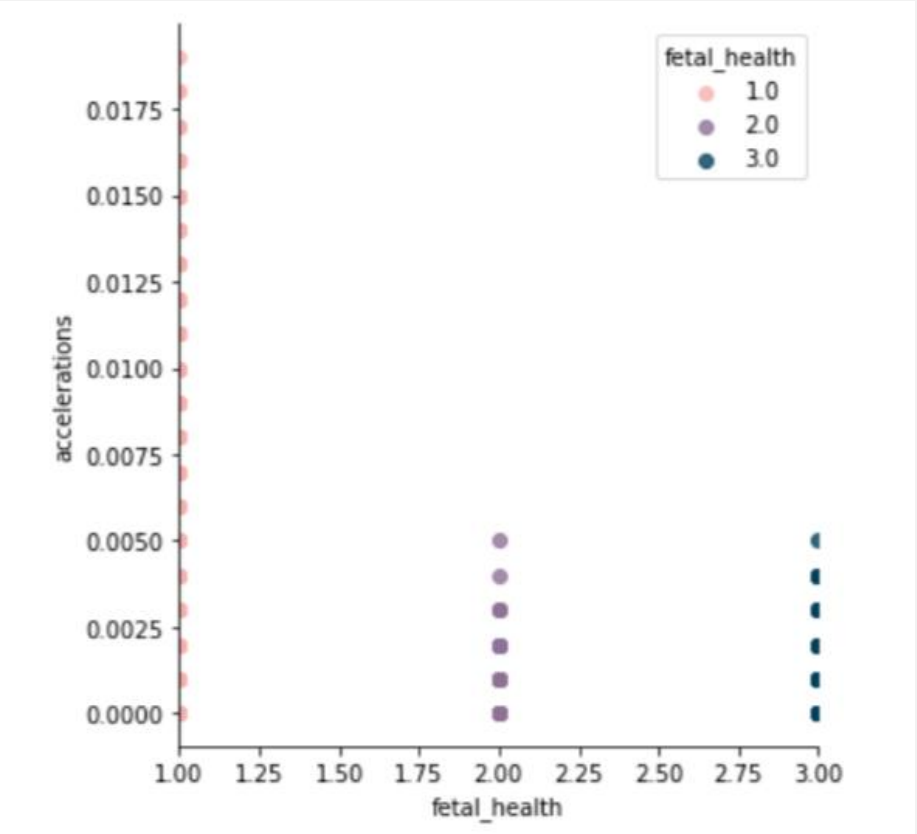


Correlation Matrix



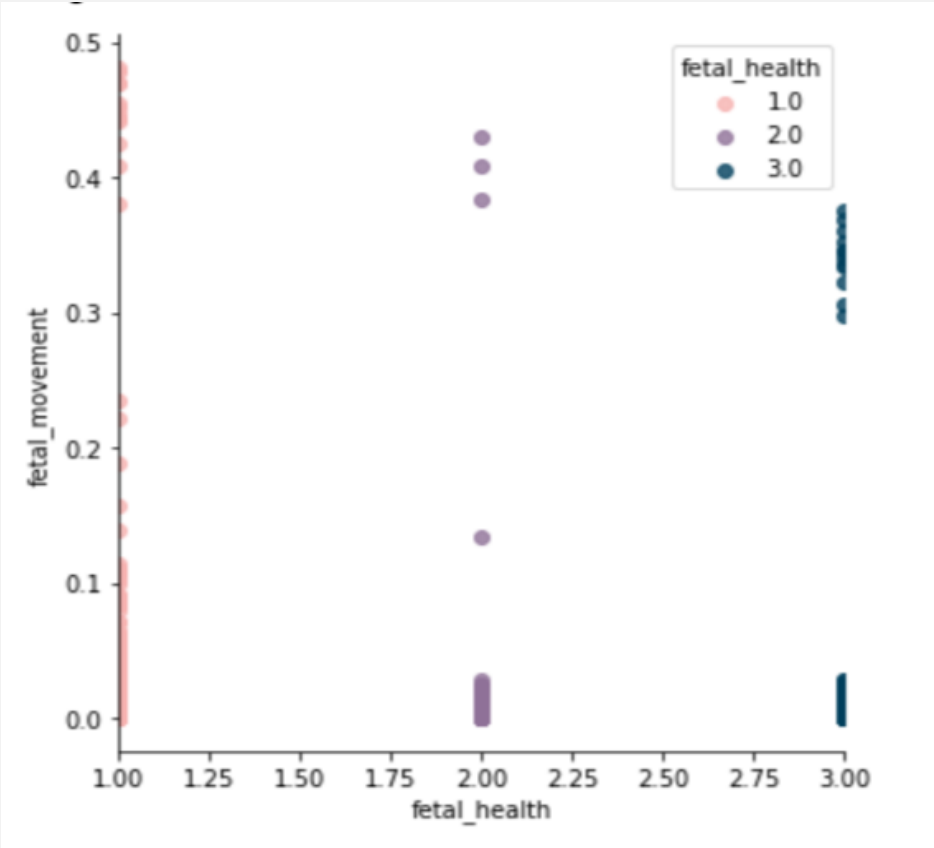
Relationships

The relationship between fetal health and acceleration :



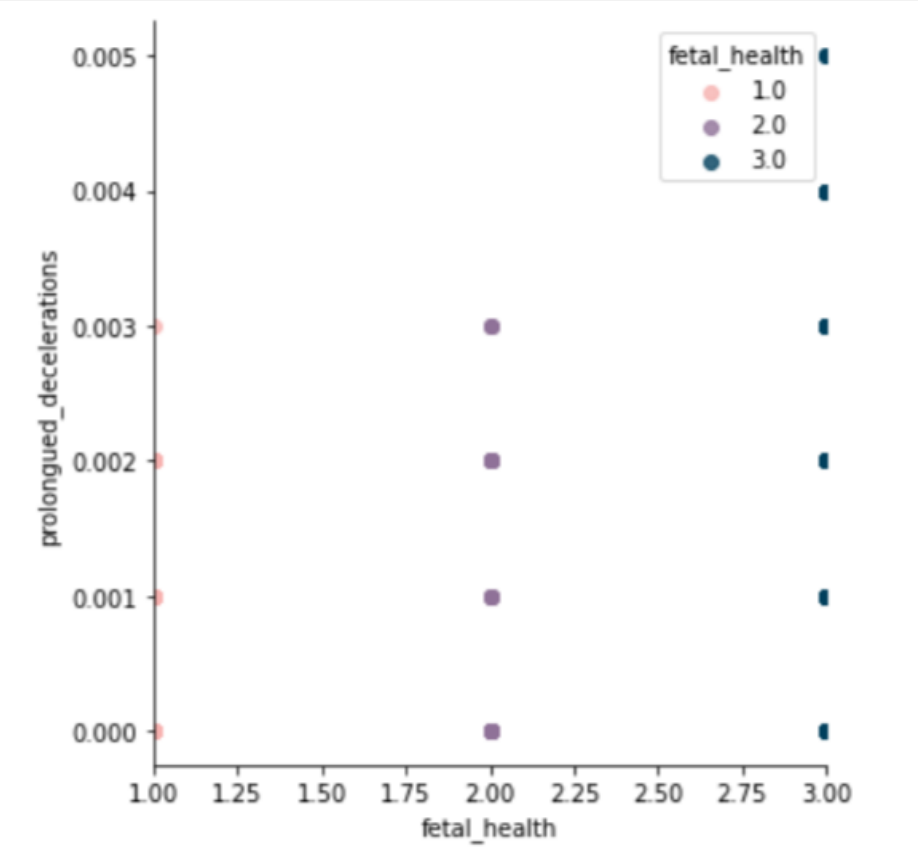
Relationships

The relationship between fetal health and fetal movement :

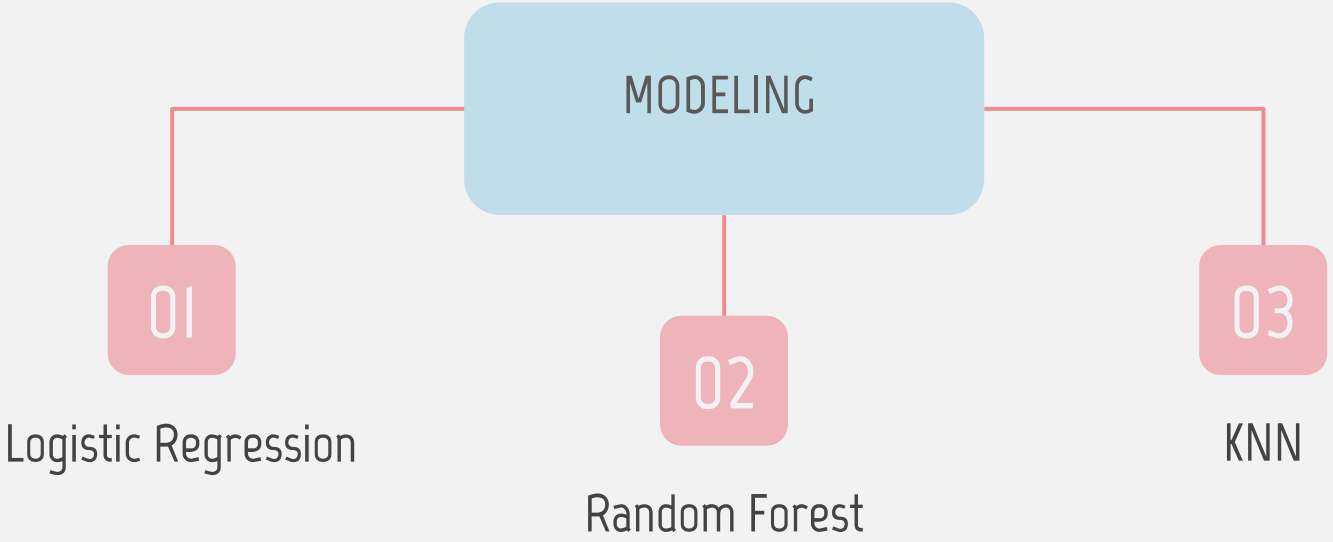


Relationships

The relationship between fetal health and prolongued decelerations :



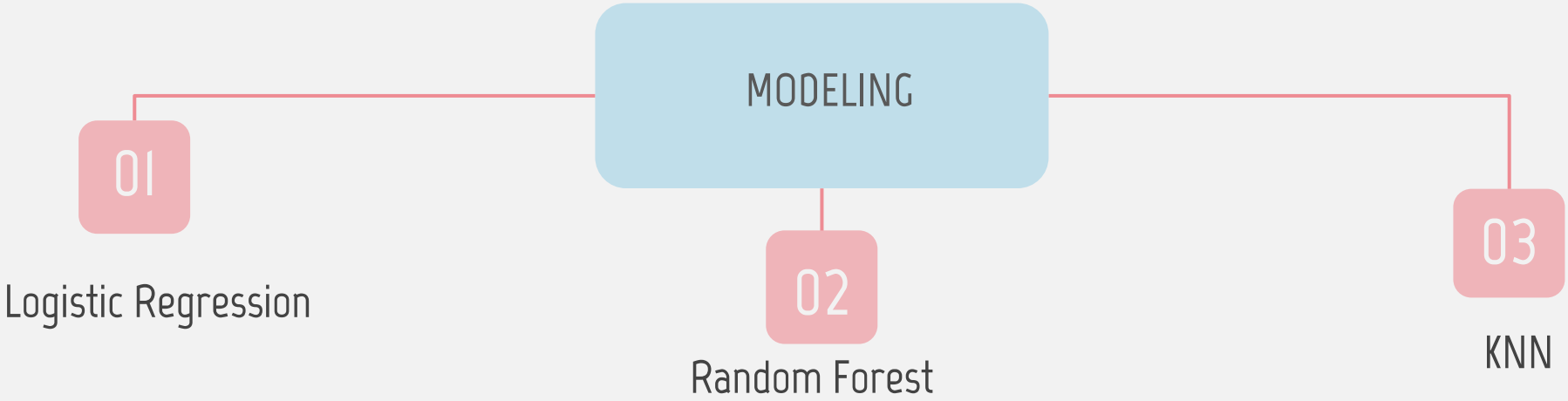
Modeling :



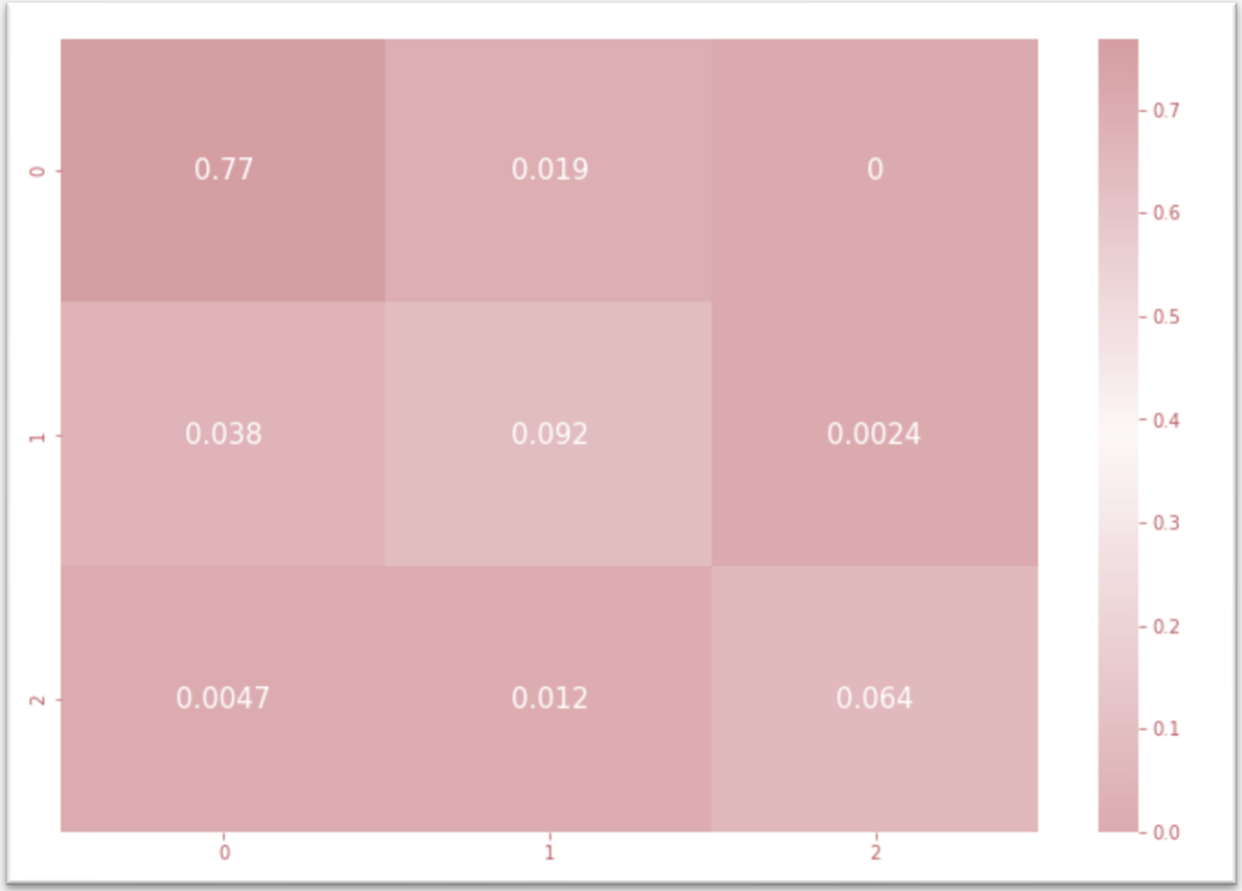
Modeling :

Model	Accuracy	MAE	MSE	RMSE	R^2	Recall	Precesion	F1 Score	ROC
Logistic regression	0.924	0.080	0.089	0.299	0.755	0.924	0.92271	0.92434	0.977
Random forest	0.957	0.047	0.056	0.238	0.845	0.957	0.956	0.957	0.984
KNN	0.929	0.075	0.085	0.291	0.768	0.929	0.933	0.929	0.948

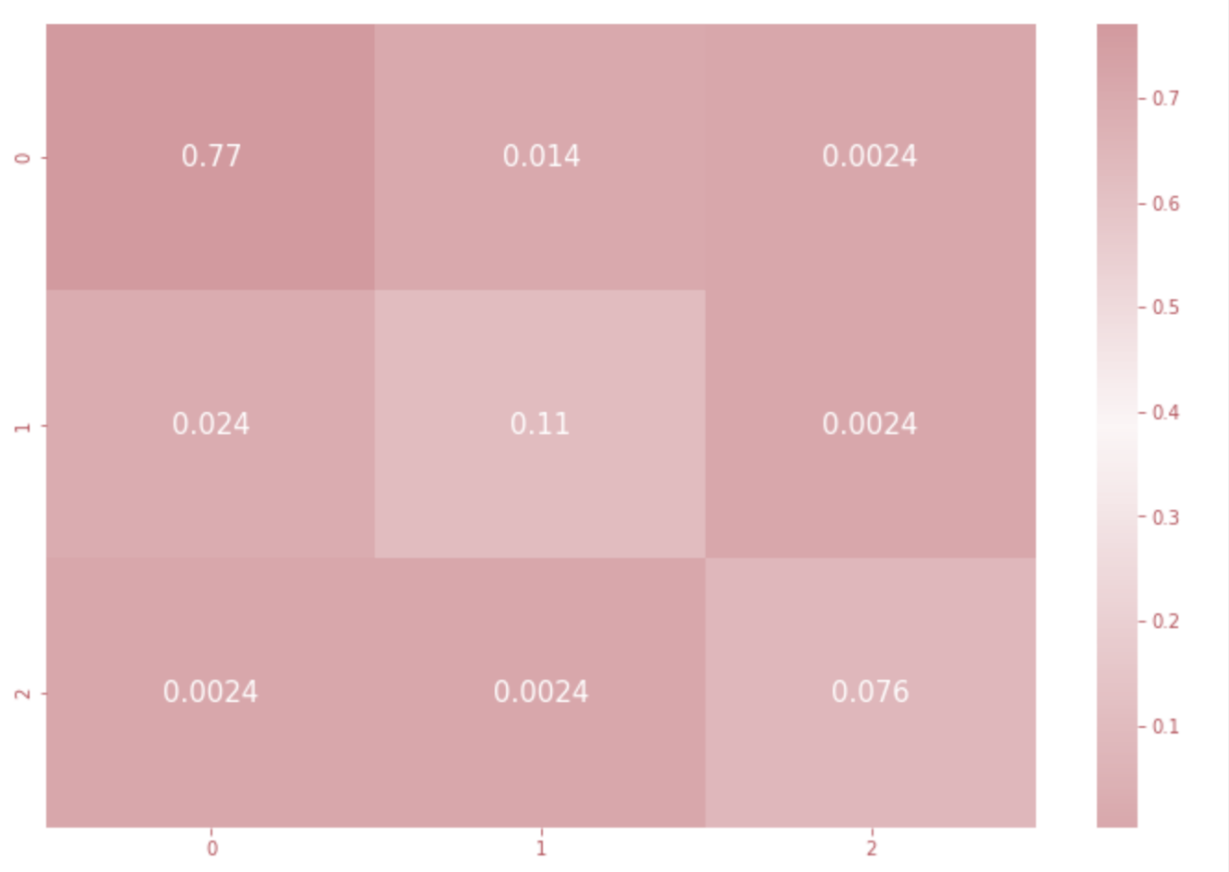
confusion Matrix



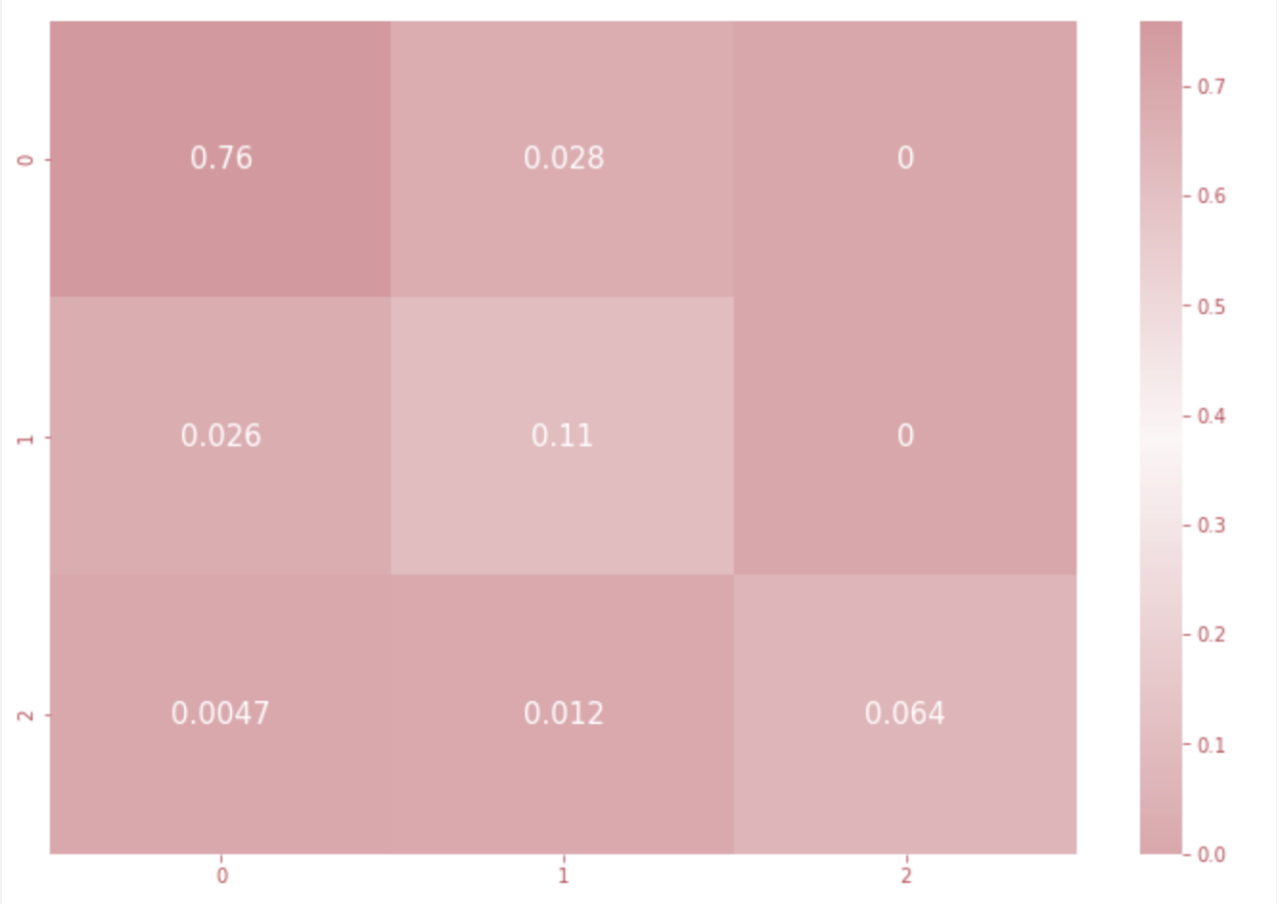
Confusion Matrix: Logistic Regression



Confusion Matrix: Random Forest



Confusion Matrix: KNN



ROC

MODELING

01

Logistic Regression

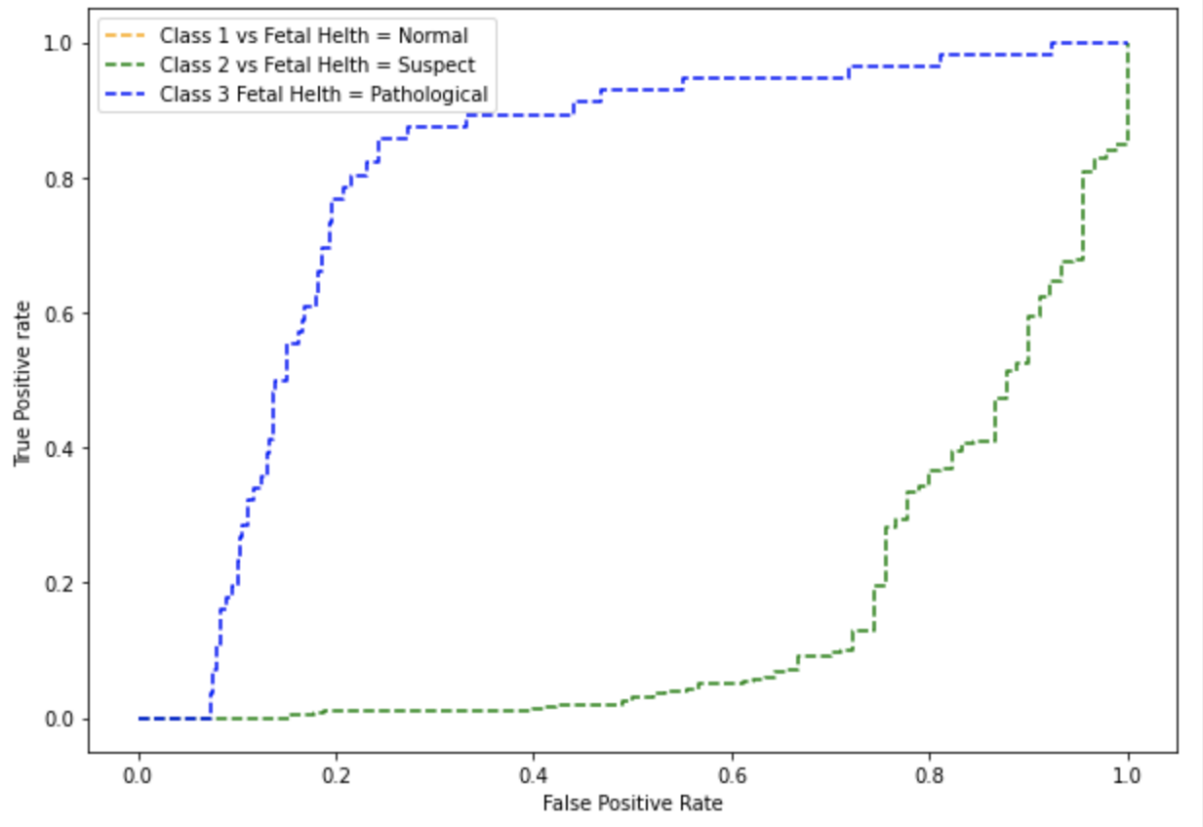
02

Random Forest

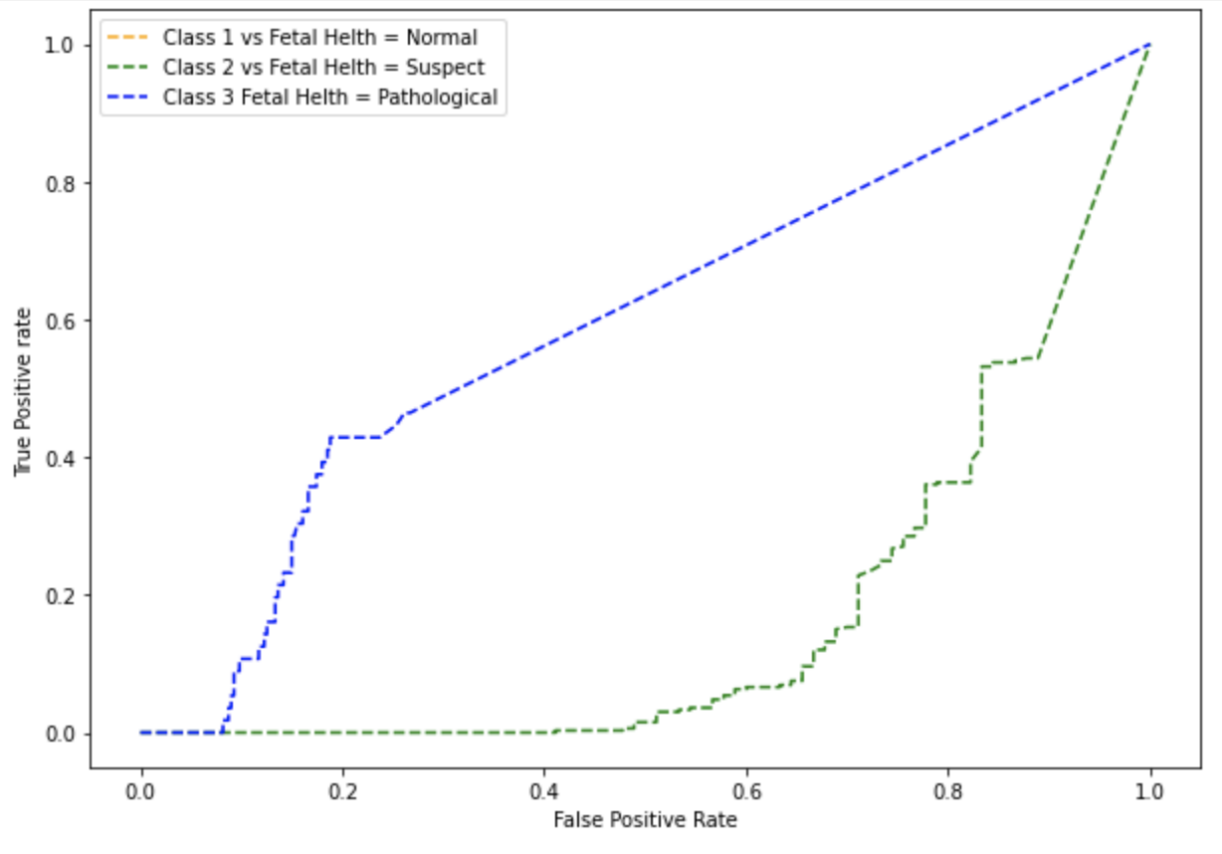
03

KNN

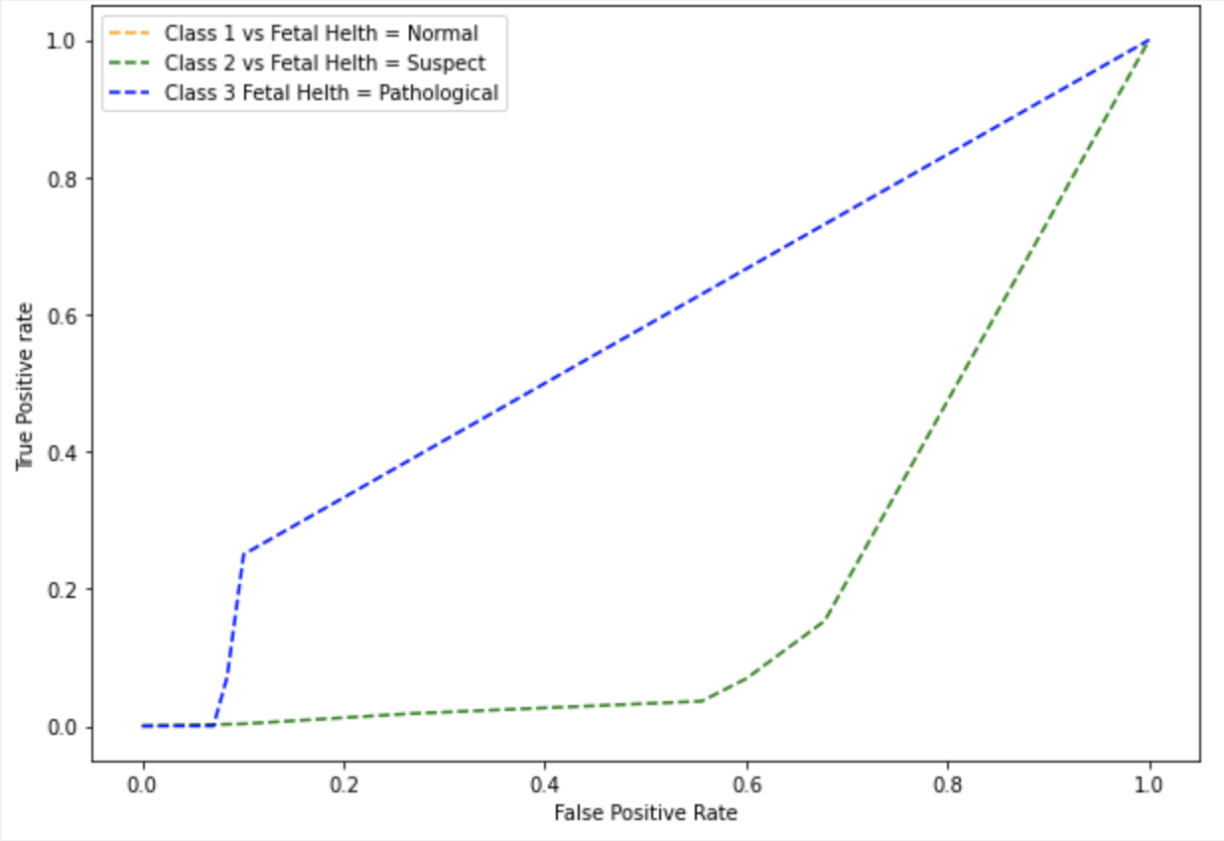
ROC: Logistic Regression



ROC: Random Forest



ROC: KNN


Class 1 vs Fetal Helth = Normal
Class 2 vs Fetal Helth = Suspect
Class 3 Fetal Helth = Pathological
True Positive rate
False Positive Rate
0.0
0.2
0.4
0.6
0.8
1.0

Conclusion:

At the end..
Random forest model is the best acuracy ..

THANKS

Do you have any questions?

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