PROJECT STATEMENT OF WORK

ORGANIZATION		
CLIENT	NAME	XX
	PHONE	123456
	EMAIL	example@gmail.com
	MAILING ADDRESS	xxx,xxx,xxx
PROVIDER	NAME	AI algorithm
	PHONE	xxx
	EMAIL	verazhang3333@gmail.com
	MAILING ADDRESS	Guangzhou,China
DATE: Oct.28 2020		AUTHOR: Juan Zhang

PROJECT	
PROJECT NAME	Fetal heart rate checker
CLIENT	Some Company
BRAND	xx Tech
PRODUCT	CTG Checker

DESCRIPTION | BACKGROUND

Trace back to 50 years ago, doctors use stethoscope to listen to the heart sounds of a fetus. It is hard to make diagnosis by listening to the fetus heart rate in a short time, and sometime the fetus heart rate need to be tested in different condition, for example, when baby is sleeping, when the mother is having a uterine contraction, etc. Mannually record the fetus heart rate is a trouble some job, and it is hard to tell how strong or acute the heart beat is by stethoscope, thus strong afffected the pediatrician making diagnosis.

A decades later, the electronic fetal monitor was invented and soon it is been extensively used in monitering fetus heart rate. It is a mile stone in the medical field, and now people are using the advanced devices to moniter fetus heart rate responded to uterine contraction. The device is used in cardiotocography is known as a cardiotocograph, this monitor provide a graph that showed how a fetus's heart rate responded to the contractions. With cardiotocography, base on the features that a cardiotocography have, pediatrician can make diagnosis of how healty a fetus is. However to make a quick diagnosis on large data that the cardiotocography presented can be challenge. To use machine learning algorithm to predict the healthy level of fetus is significant to help pediatricians.

DATA SOLUTION

Data Source:

The dataset is classified by expert obstetricians,it is from faculty of Medicine,University of Porto, Portugal. There are 2126 fetal cardiotocograms included in this dataset. The data set repository url is http://archive.ics.uci.edu/ml/datasets/Cardiotocography

Data Assumptions:

Question		Why model precision rate is too high?
Assumptions	Precision rate is too high, about 98% initially.	Overfitting while traning model
How to fix	Demension reduction.	Dimension redution, delete some samples
Data required	Less data columns.	Remove part of the rows that have large number in one specific label compares to other labels.

Data limitations:

1. The age of the records is not averagely distributed, some times we need more records for rare diseases.

2. Some hospitals are not willing to share patients' records.

3. Some diseases records are hard to collect in domestic, this can result from some illness are related to geograpical reason.

4. The probability of wrong records, which means the patient is been wrongly diagnosed. This will affect model accuracy.

5. Missing values of the records, also some records that are too old.

Other Constrains:

The worker who do data cleanning job lacking of experieces.

PROJECT TEST PROCESS

1. Using Precision and Recall mothod to test the accuracy of the model.

2. Using PR and ROC curve to test the stability of the performance of the model.

3. Using Cross Valivation to determine the devision of the trainning data and test data.

4. Adjust the hyperparameter of the model, then find out if the model is overfiting or underfitting, Analysis the reason then take corespondent measure to fix the problems.

DELIVERABLE MATERIALS

STAKEHOLDERS	
IT AFFECTED TEAMS	xx
NON-IT AFFECTED TEAMS	xx
STEERING COMMITTEE	xx
CUSTOMERS	xx
POTENTIAL / OTHER	xx

TIMELINE	
Oct.28 2020	SOW V1
NOV.23 2020	Data Aquisiton and Understanding; SOW V2
NOV.23 2020	Modelling
NOV. 23 2020	*Prototyping*
DEC.28 2020	*Deployement*