# Cardiotocography Presentation

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# Background

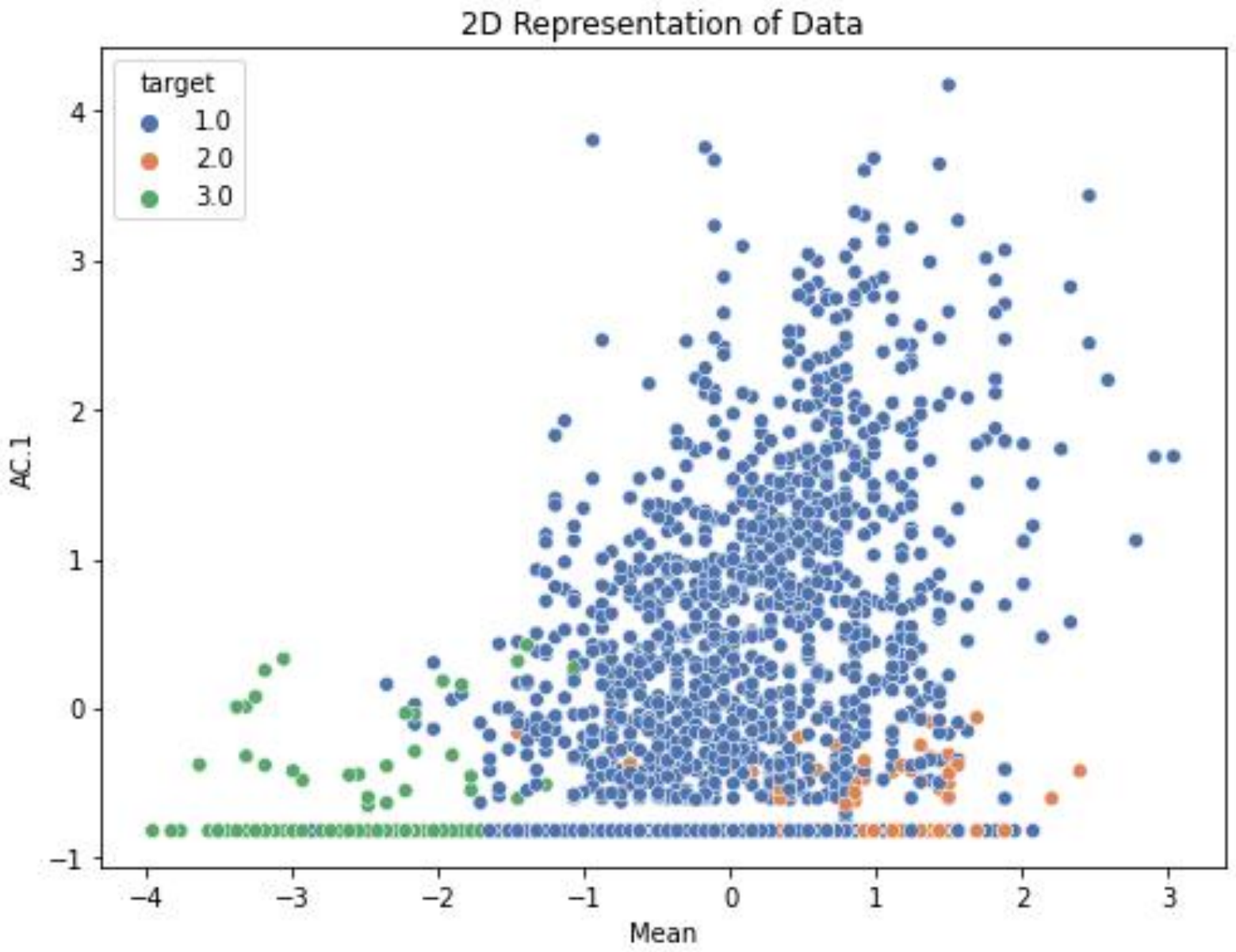
- Identify fetus(s) who may be hypoxic
- Guide assessment of fetal well-being
- Determine mode of birth

# Business Understanding

- Shortage of staff
- Monitoring intervals
- Incorrect interpretation of deceleration
- Misidentification of MHR as FHR

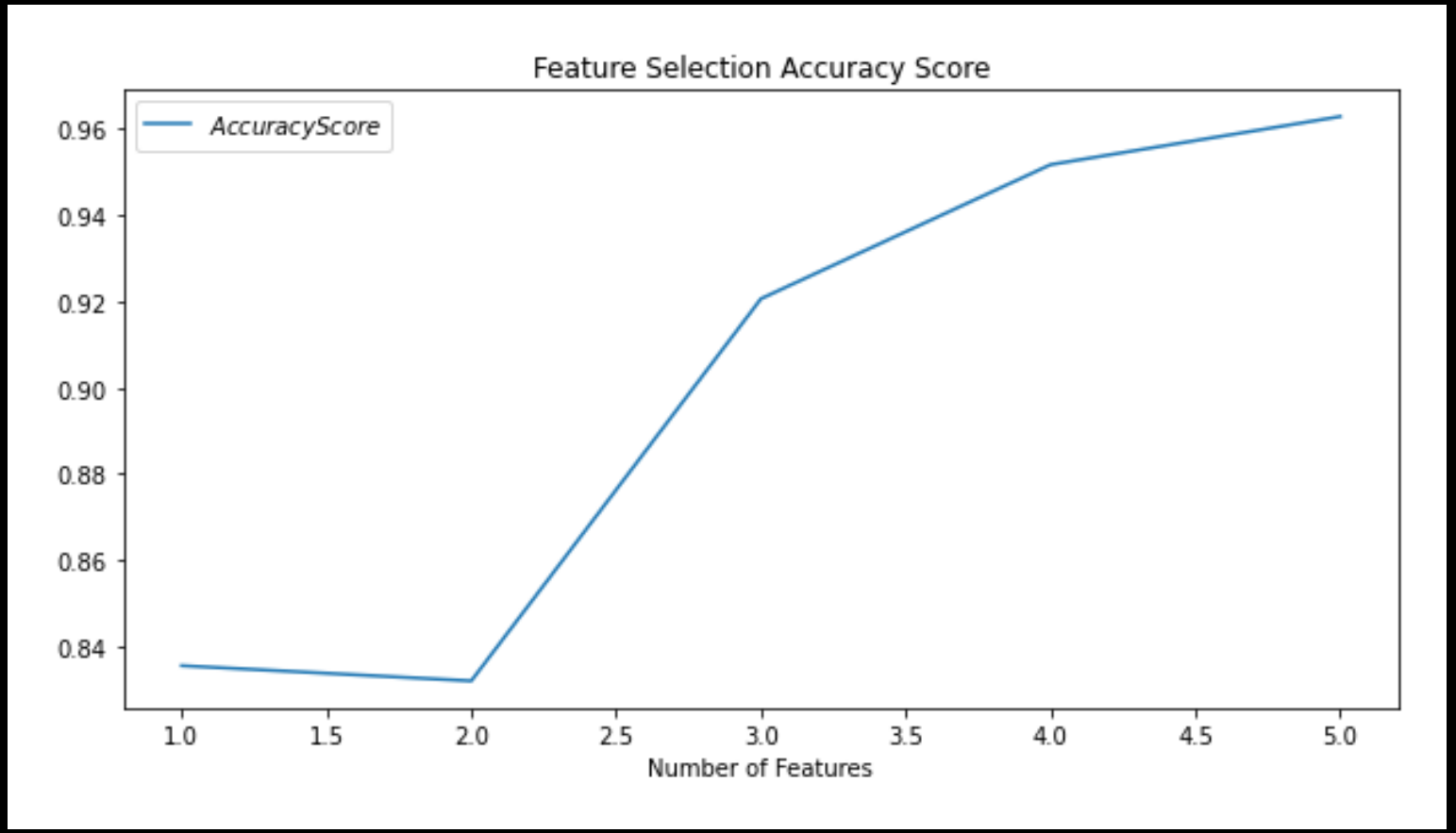
# Data Understanding

- Normal
- Suspect: commence conservative measures
- Pathologic: take fetal blood sample/ expedite birth




# Data Preparation

# Feature Selection



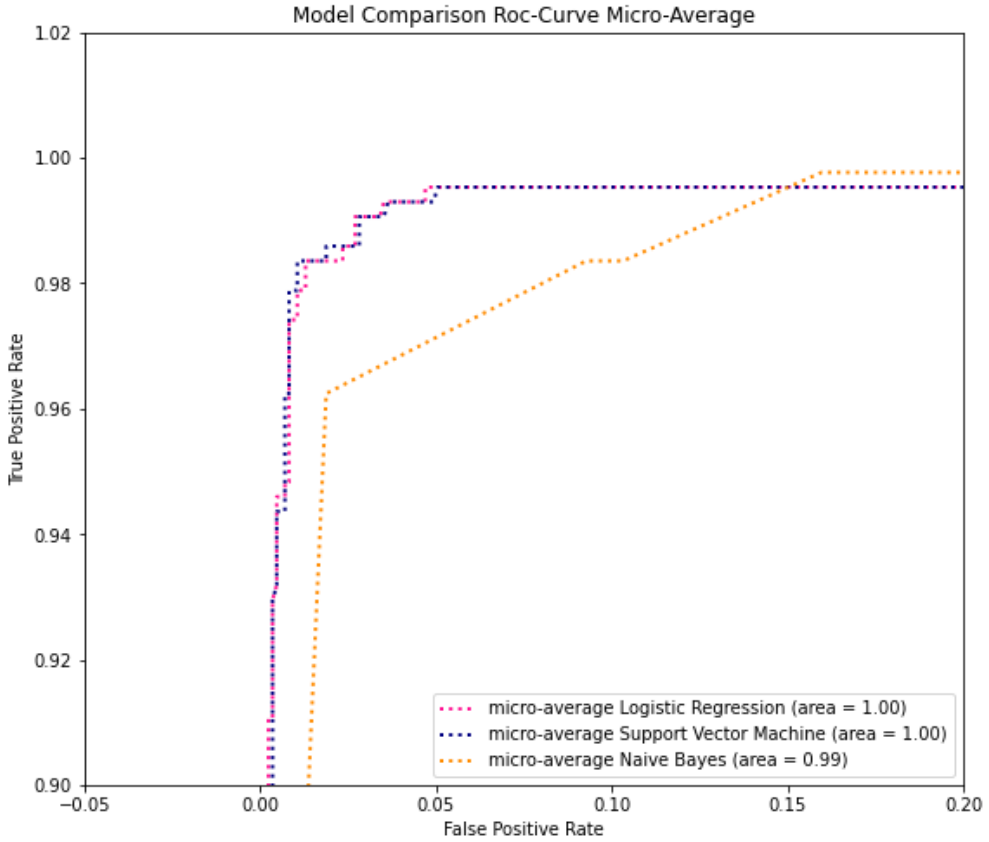

- Recurcive feature elimination (RFE) reduce 42 features to 5 features
- Accelerations (SisPorto)
- Histgram mean
- Largely decelerative pattern
- Flat-sinusoidal pattern (pathological state)
- Class code (1 to 10) for classes A to SUSP

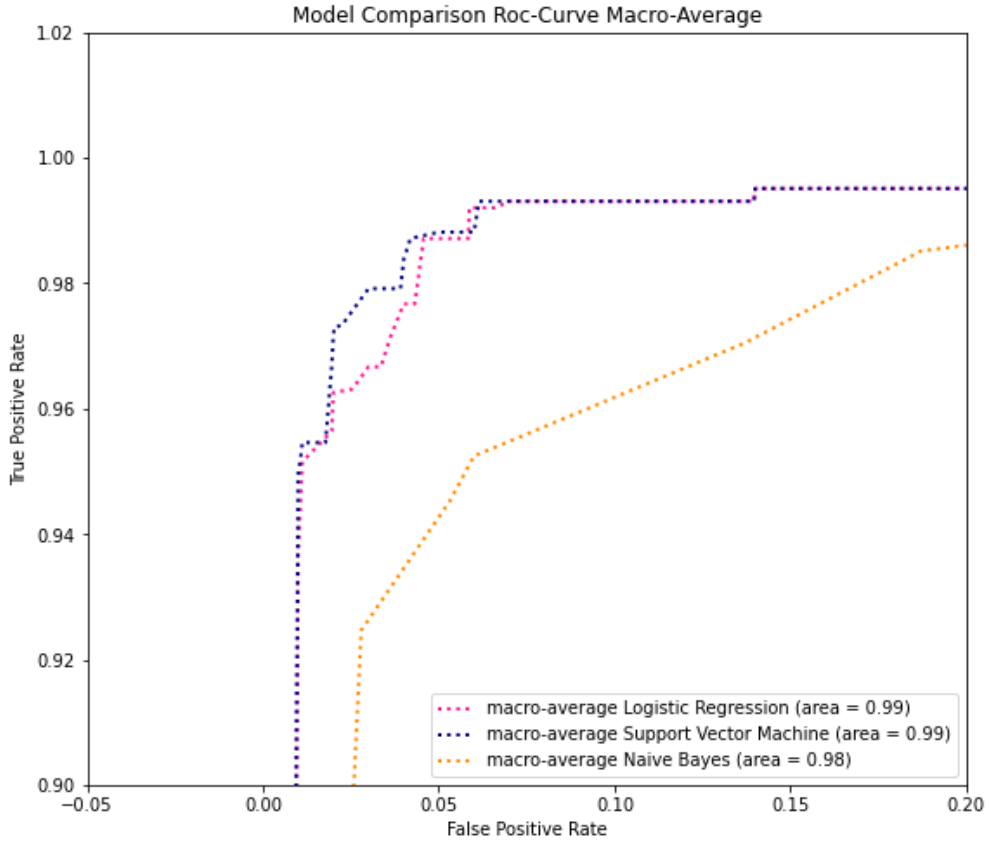
# Modelling-Classification

- Logistic Regression
- Support Vector Machine (SVM)
- Naïve Bayes (BernoulliNB)

# Roc-Curve

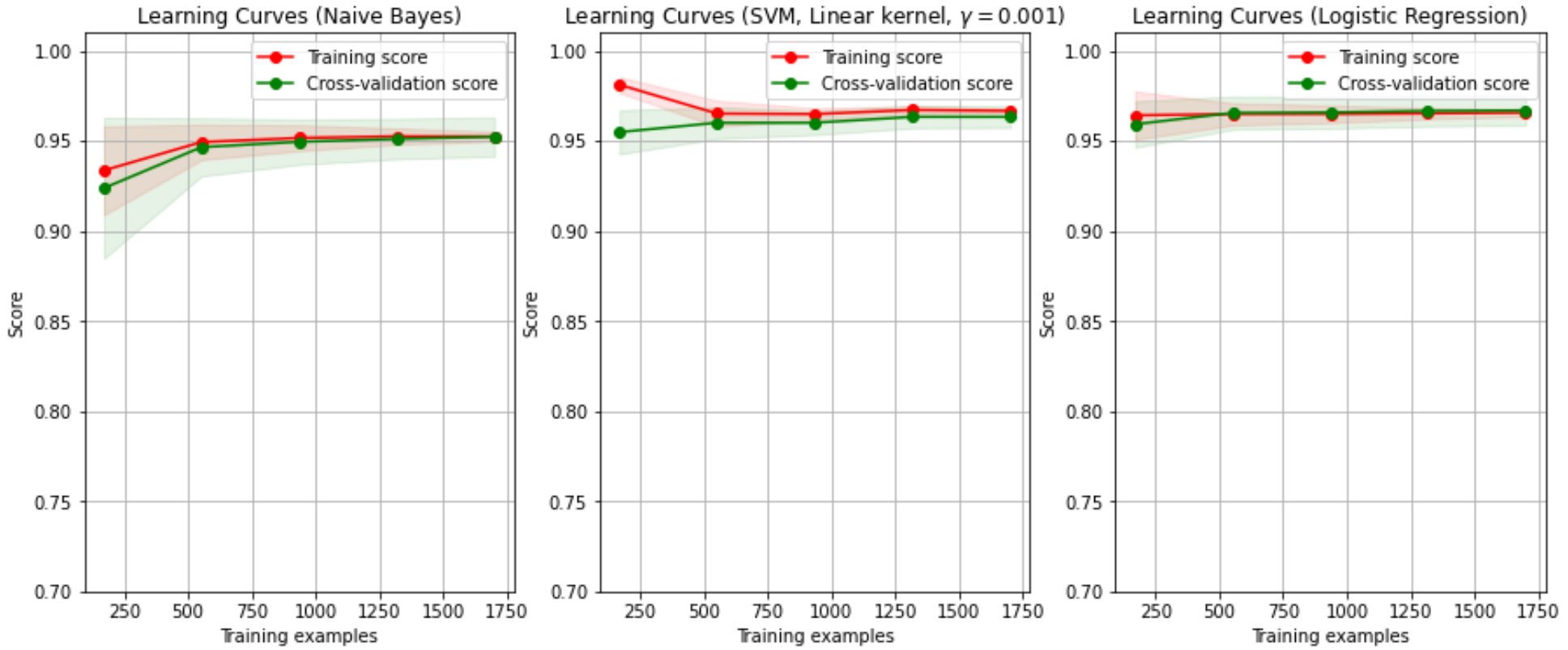
- Better known as AUC-ROC score/curves. It makes use of true positive rates(TPR) and false positive rates(FPR)



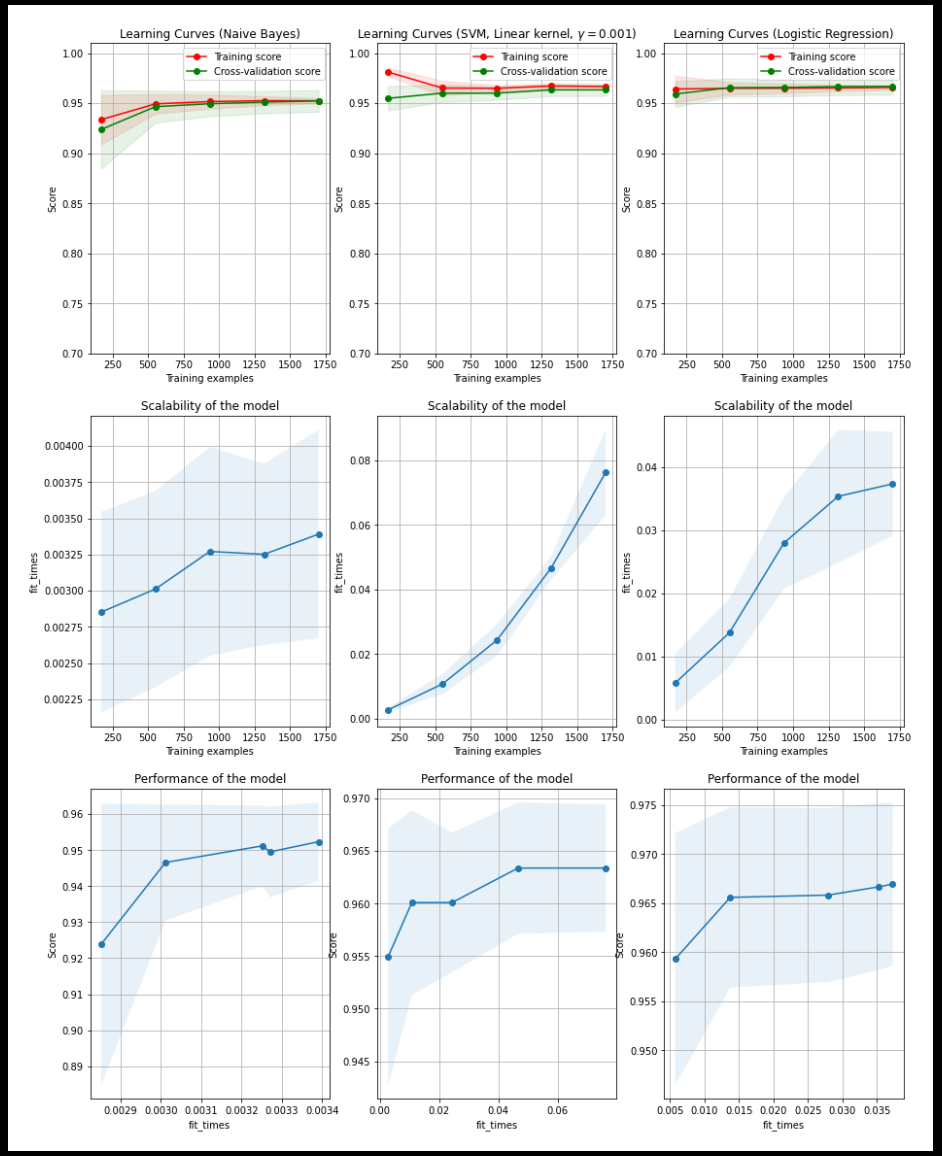
# Evaluation

| | precision | recall | f1-score | runtime (ms) | meanAcc |
|---|---|---|---|---|---|
| **logisticRegression** | 0.97502 | 0.96201 | 0.96841 | 11.02114 | 0.96378 |
| **supportVectorMachine** | 0.97502 | 0.96201 | 0.96841 | 94.74397 | 0.96237 |
| **naiveBayes** | 0.94751 | 0.95097 | 0.94891 | 7.97725 | 0.95249 |



# Deployment/ Future Development

- Logistic Regression Model
- Implementing the chosen legitimate model, it is able to predict with 96% confidence the status of fetus(s) during pregnancy
- Further research into how data is recorded
- High bias, requires additional features to the dataset
- Implement application/ device to automate classification process



# Contact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# Thank You

## Any Questions ?