

## Phase 6

### Model Performance Metrics

Date	08 November 2022
Team ID	PNT2022TMID28916
Project Name	Project - Visualizing and Predicting Heart Diseases with an Interactive Dash Board
Maximum Marks	10 Marks

The category or classes of data are found in a classification problem using training data. The model gains knowledge from the provided dataset before classifying the fresh data into groups or classes in accordance with the training. As the result, it foresees class labels like Yes or No, 0 or 1, Spam or Not Spam, etc.

### Confusion Matrics:

For Logistic Regression

```
from sklearn.metrics import confusion_matrix
cm=confusion_matrix(y_test,prediction1)
cm
```

Out[54]:

```
array([[40,  5],
       [ 9, 27]], dtype=int64)
```

```
TP=cm[0][0]
TN=cm[1][1]
FN=cm[1][0]
FP=cm[0][1]
print('Testing Accuracy:', (TP+TN+FN)/(TP+TN+FN+FP))
```

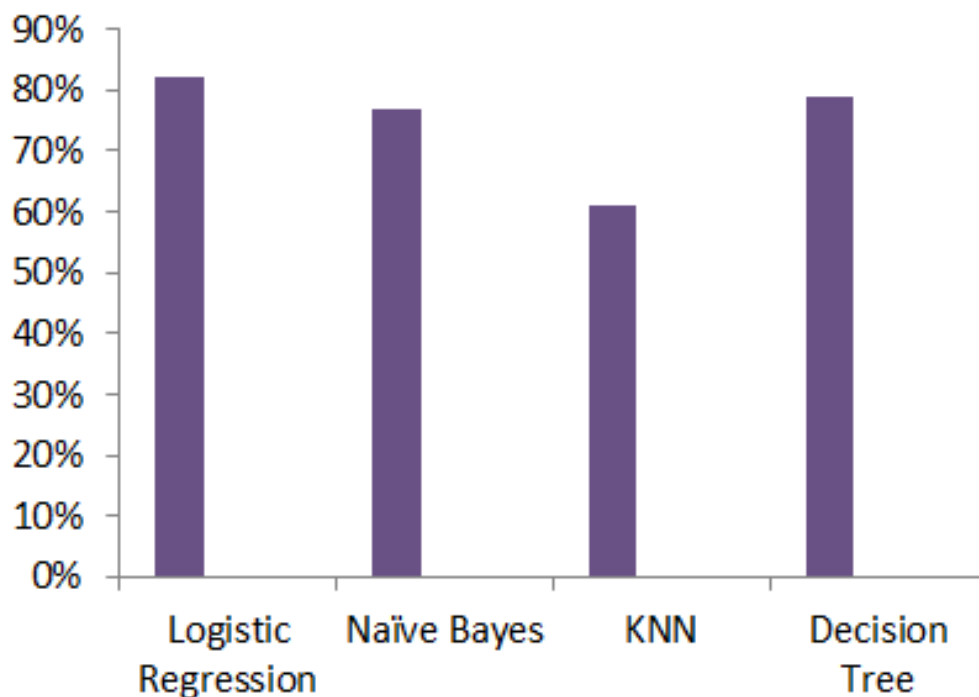
Testing Accuracy: 0.9382716049382716

## Accuracy:

```
print('Logistic Regression :',l)  
print('KNN :',k)  
print('Naive Bayes :',n)  
print('Decision Tree :',d)
```

Logistic Regression : 0.8271604938271605  
KNN : 0.6111111111111112  
Naive Bayes : 0.7794117647058824  
Decision Tree : 0.7962962962962963

*Comparing and finding the accuracy of Algorithms.*



*Fig. Visual analytics of all the 4 algorithms used.*

## Precision:

Precision is determined by dividing the total number of true positives and false positives by the imbalanced classification problem's two classes.

$$\text{Precision} = \frac{\text{TruePositives}}{(\text{TruePositives} + \text{FalsePositives})}$$

## Recall:

Recall is determined by dividing the total number of true positives and false negatives by the imbalanced classification problem's two classes.

## Specificity:

A diagnostic test's sensitivity and specificity define its ability to correctly diagnose a patient when compared to a gold standard.

Using conventional methods, sensitivity, specificity, and relative risks were computed for each research outcome. The weighted estimates for sensitivity, specificity, and positive likelihood ratios provided are from the random-effects meta-analysis.

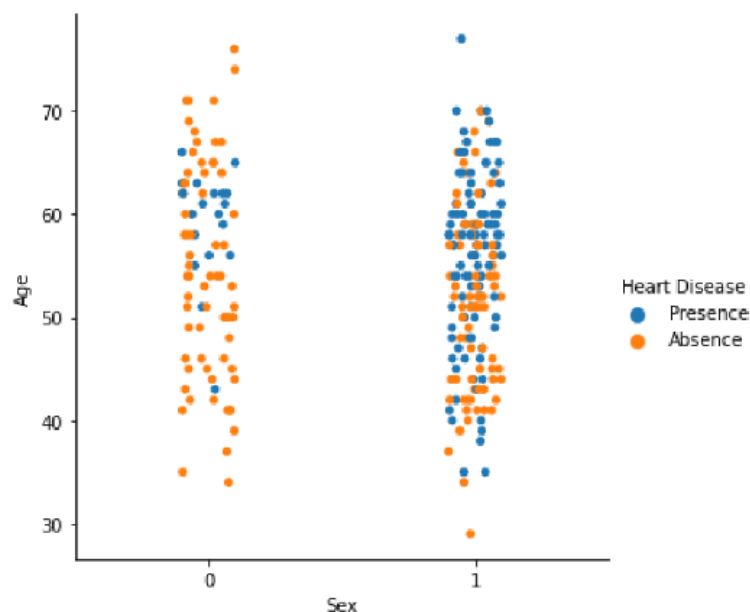
$$\text{Specificity} = \text{True Negatives} / (\text{True Negatives} + \text{False Positives})$$

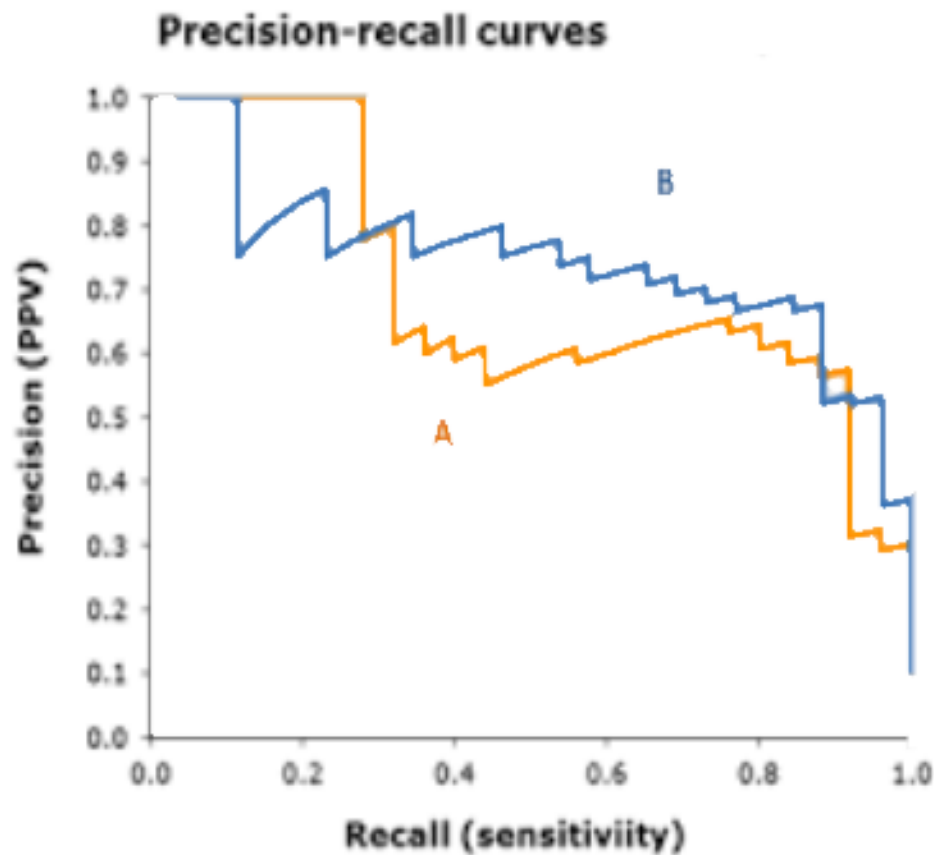
## F1 Score:

F-Measure provides a way to combine both precision and recall into a single measure that captures both properties.

$$\text{F-Measure} = (2 * \text{Precision} * \text{Recall}) / (\text{Precision} + \text{Recall})$$

## Precision-Recall or PR curve:





## ROC Curve:

Using these values,

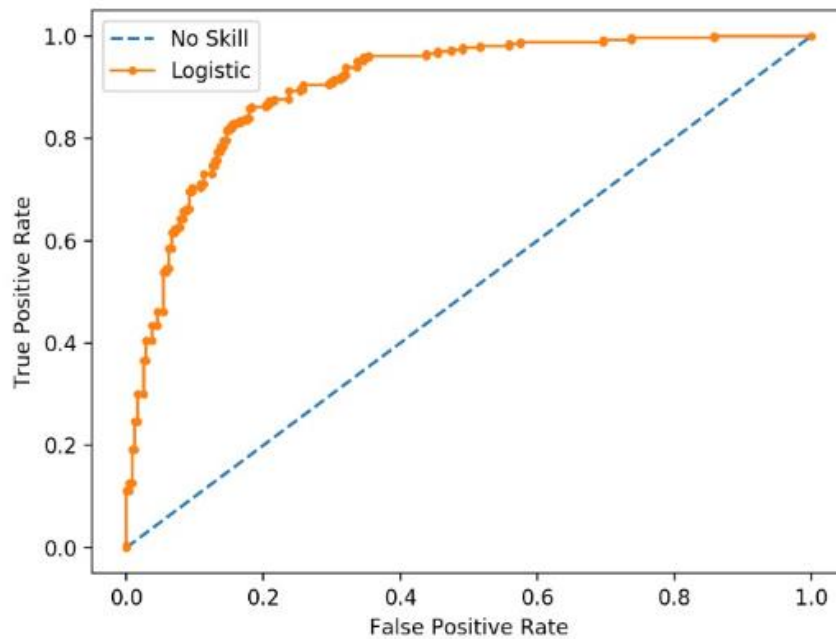
```
TP=cm[0][0]
TN=cm[1][1]
FN=cm[1][0]
FP=cm[0][1]
print('Testing Accuracy:', (TP+TN+FN)/(TP+TN+FN+FP))
```

Testing Accuracy: 0.9382716049382716

And using the formula,

True Positive Rate = True Positives / (True Positives + False Negatives)

False Positive Rate = False Positives / (False Positives + True Negatives)



## PR vs ROC curve:

```
TP=cm[0][0]
TN=cm[1][1]
FN=cm[1][0]
FP=cm[0][1]
print('Testing Accuracy:', (TP+TN+FN)/(TP+TN+FN+FP))
```

Testing Accuracy: 0.9382716049382716

Both the curves uses these values like,

- True Positive
- True Negative
- False Positive
- False Negative

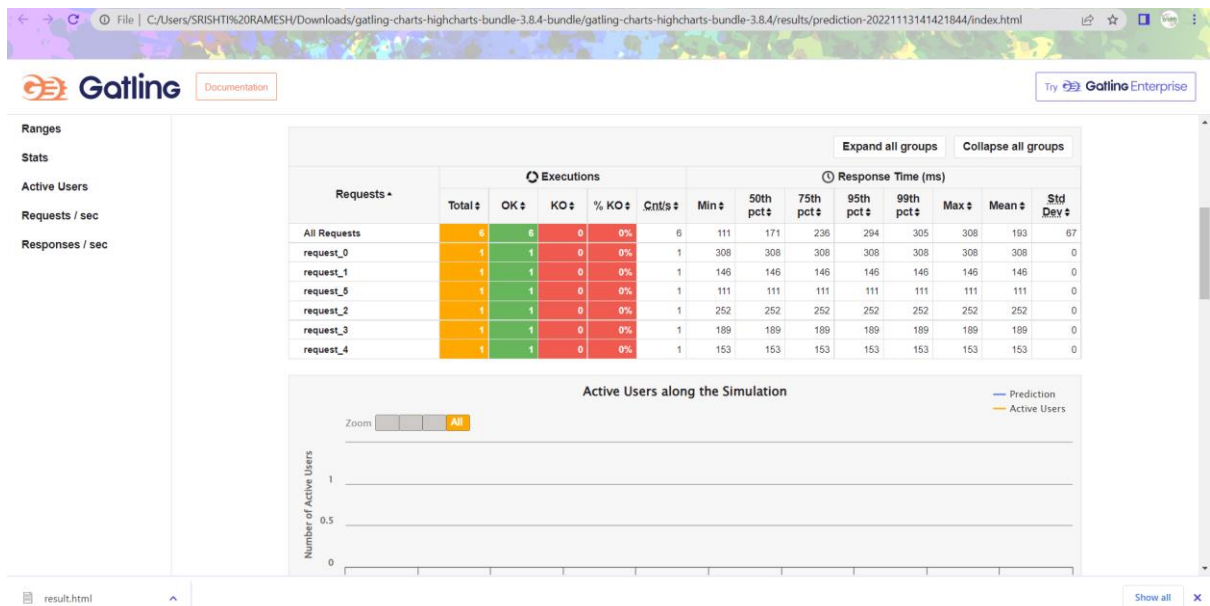
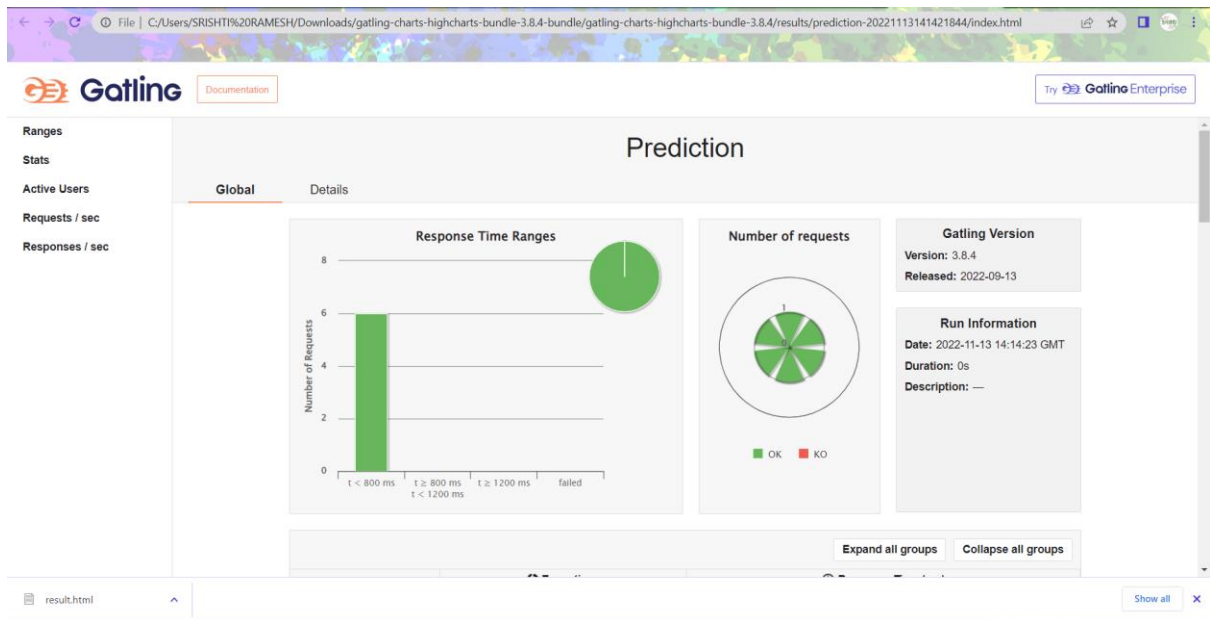
## Gatling Testing in our project

Done By:

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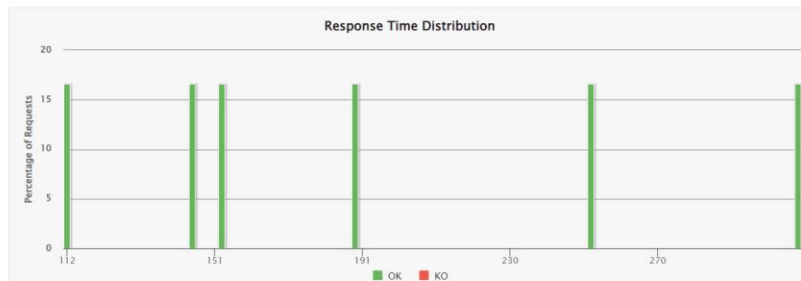
Team ID: PNT2022TMID28916







Ranges  
Stats  
Active Users  
Requests / sec  
Responses / sec



result.html

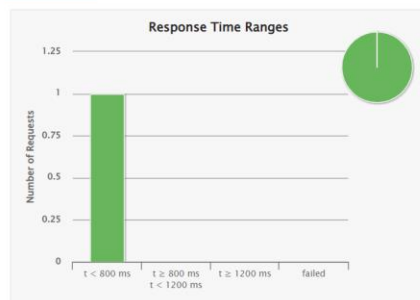
Show all

request\_0  
request\_1  
request\_5  
request\_2  
request\_3  
request\_4

## Prediction

Global

Details



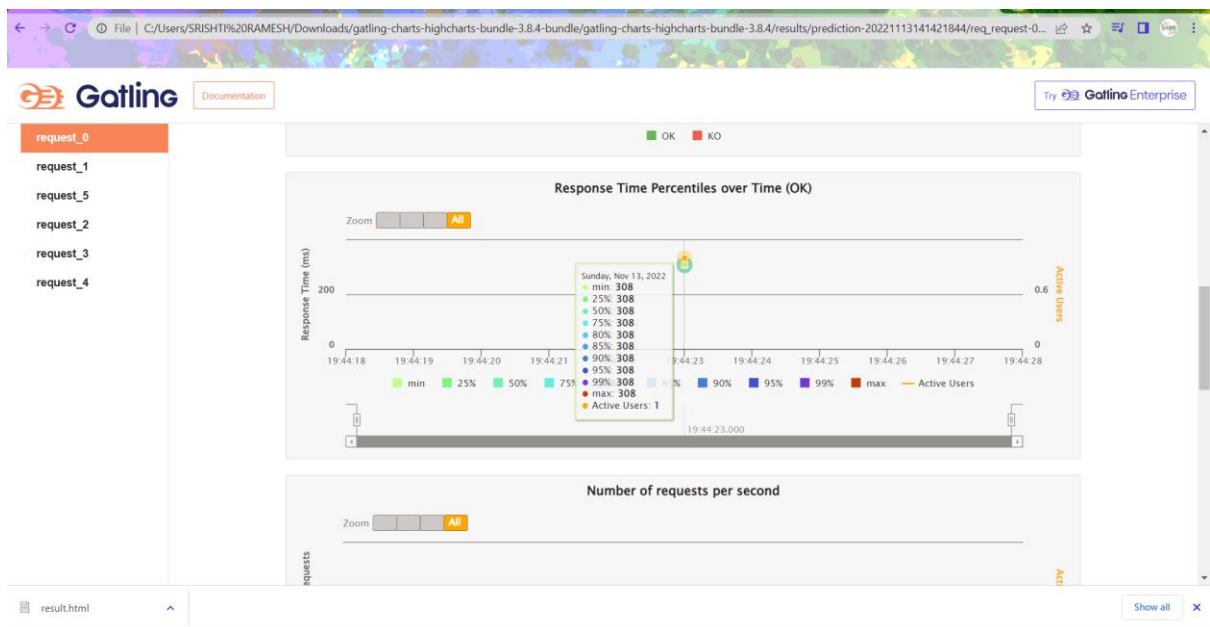
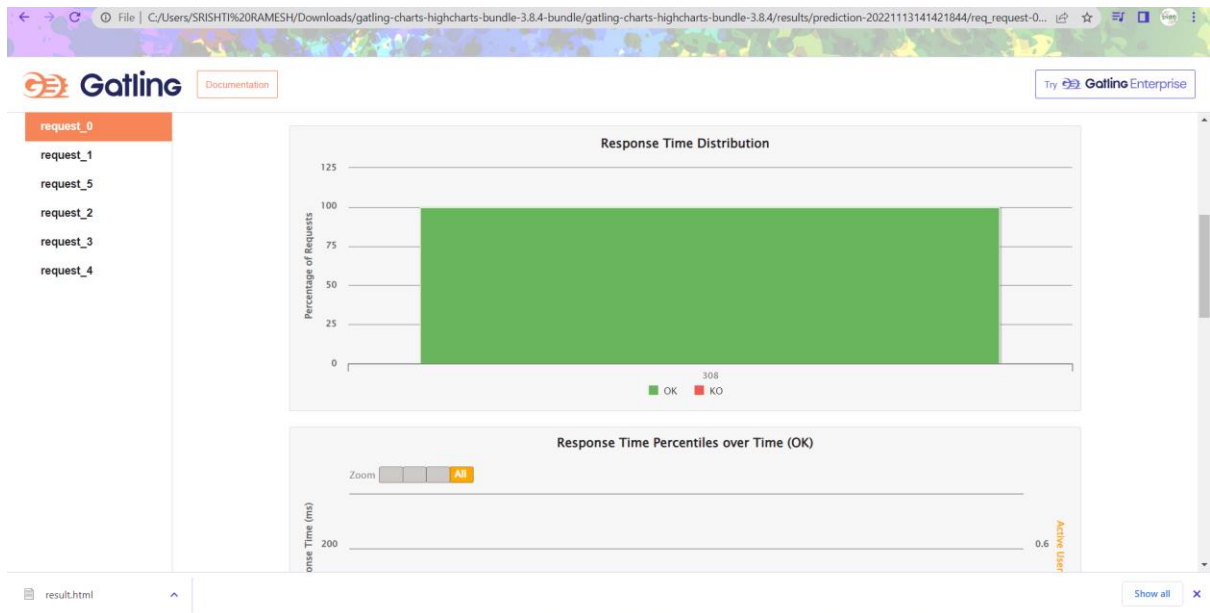
Stats			
Executions			
	Total	OK	KO
Total count	1	1	0
Mean count/s	1	1	-
Response Time (ms)			
	Total	OK	KO
Min	308	308	-
50th percentile	308	308	-
75th percentile	308	308	-
95th percentile	308	308	-
99th percentile	308	308	-
Max	308	308	-
Mean	308	308	-
Standard Deviation	0	0	-

Response Time Distribution

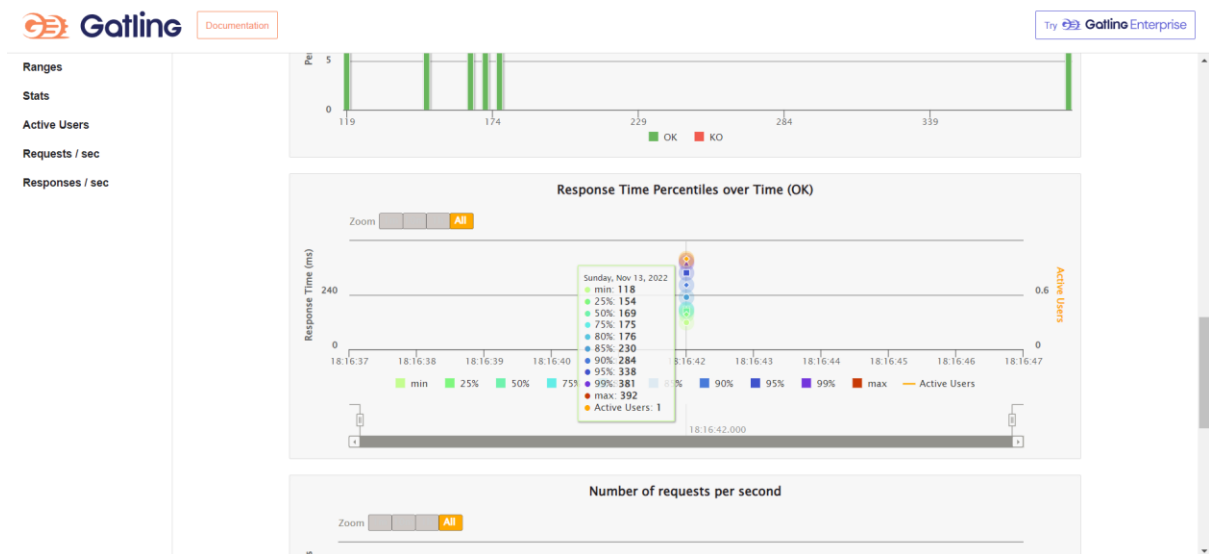
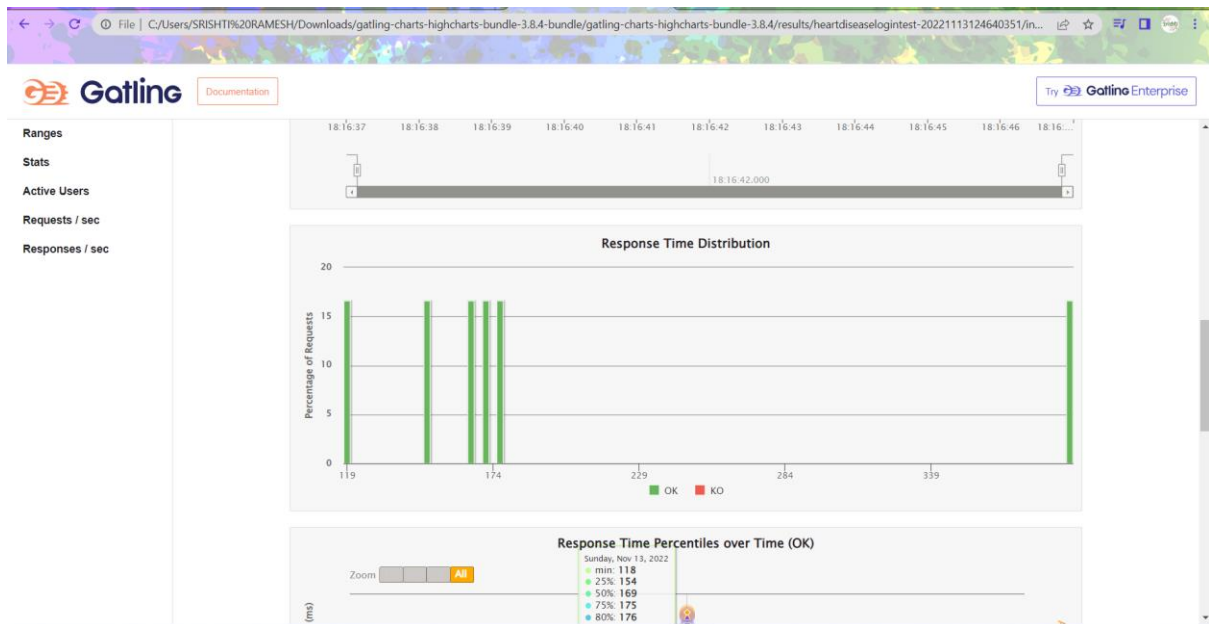
125

result.html

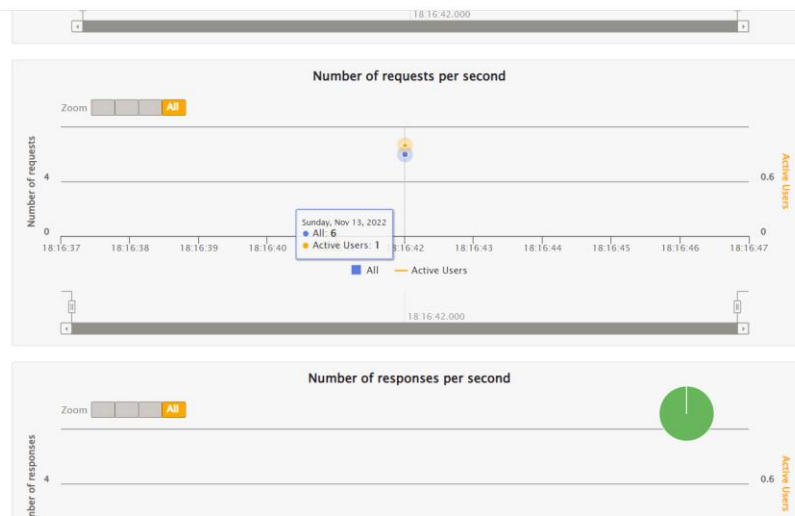
Show all







Ranges  
Stats  
Active Users  
Requests / sec  
Responses / sec



request\_0

request\_2

request\_1

request\_3

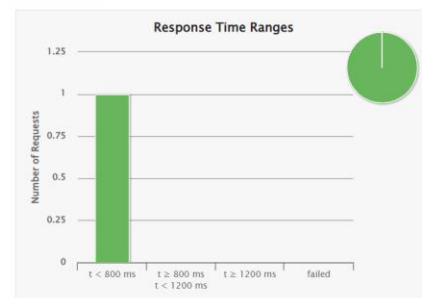
request\_4

request\_5

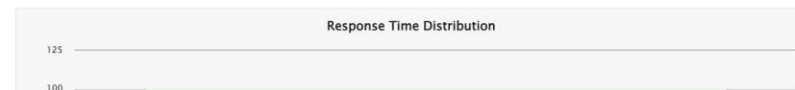
## HeartDiseaseLoginTest

Global

Details



Stats			
Executions			
Total count	1	1	0
Mean count/s	1	1	-
Response Time (ms)			
Total	118	118	-
Min	118	118	-
50th percentile	118	118	-
75th percentile	118	118	-
95th percentile	118	118	-
99th percentile	118	118	-
Max	118	118	-
Mean	118	118	-
Standard Deviation	0	0	-



request\_0

request\_2

request\_1

request\_3

request\_4

request\_5

