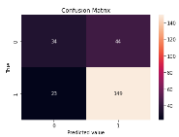



```
new_bowtiep(confusion_).annotated(Title="Confusion Matrix")
plt.figure(figsize=(10,10))
plt.imshow(new_bowtiep_annotated)
plt.colorbar()
```



Out[22]: Text(133.0, 0.0, 'True')

Grid search cross-validation creates several models using various combinations of hyperparameters; then evaluates the performance of each combination.

The challenging process of creating and assessing models with various combinations of hyperparameters is handled by Sklearn's GridSearchCV() algorithm. A parameter that cannot be estimated from data is referred to as a hyperparameter. Before a model starts its learning process, a hyperparameter's value must be set. A tool called grid search constructs a model for each combination of hyperparameters that we specify, then assesses each model to determine hyperparameters results whichever pairs in the best model. Let's attempt using hyper-parameter tune to enhance the model performance as it is still low. GridSearch demonstrates $p = 2$ is the best distance algorithm, whereas the best leaf size = 150. K should be as high as possible, which is 19. Even after performing the hyper parameters tuning for the best fit KNN model, the model has only performed poor even before tuning, even though there is not much difference but still considering the poor performance after tuning. KNN model can conclude the best fit mode.