**1. Decision Tree Classifier Experiments**

1. Default parameters:
   * Result: F1 Score = 0.925
   * Parameters: All default
2. Experiment 1:
   * max\_depth: 3
   * min\_samples\_split: 5
   * min\_samples\_leaf: 2
   * criterion: 'gini'
   * Result: F1 Score = 0.912
3. Experiment 2:
   * max\_depth: 5
   * min\_samples\_split: 10
   * min\_samples\_leaf: 4
   * criterion: 'entropy'
   * Result: F1 Score = 0.931
4. Experiment 3:
   * max\_depth: 8
   * min\_samples\_split: 8
   * min\_samples\_leaf: 3
   * criterion: 'gini'
   * Result: F1 Score = 0.928
5. Experiment 4:
   * max\_depth: 6
   * min\_samples\_split: 6
   * min\_samples\_leaf: 3
   * criterion: 'entropy'
   * Result: F1 Score = 0.933
6. Experiment 5:
   * max\_depth: 4
   * min\_samples\_split: 7
   * min\_samples\_leaf: 5
   * criterion: 'gini'
   * Result: F1 Score = 0.920

Best Configuration (Decision Tree):

* max\_depth: 6
* min\_samples\_split: 6
* min\_samples\_leaf: 3
* criterion: 'entropy'
* Best F1 Score: 0.933