Multiclass

Best k: 15

Best Hyperparameters: {'C': 59, 'gamma': 0.1, 'kernel': 'rbf'}

Best Feature selection: Index(['TSH', 'T3', 'TT4', 'T4U', 'FTI', 'on\_thyroxine\_0', 'on\_thyroxine\_1',

'pregnant\_0', 'pregnant\_1', 'TT4\_measured\_0', 'TBG\_measured\_0',

'TBG\_measured\_1', 'referral\_source\_STMW', 'referral\_source\_SVI',

'referral\_source\_other'],

dtype='object')

Cross-Validation Scores: [0.89305177 0.88760218 0.89638718 0.88957055 0.88752556]

Average Cross-Validation Score: 0.8908274500407698

Performance of the SVM model:

Accuracy: 0.880; Precision: 0.867; Recall: 0.880; F1 score: 0.869

Top 10 features:

Feature Importance

2 TT4 0.105886

0 TSH 0.093787

1 T3 0.088610

3 T4U 0.069155

4 FTI 0.046049

5 on\_thyroxine\_0 0.020436

6 on\_thyroxine\_1 0.020436

14 referral\_source\_other 0.017766

9 TT4\_measured\_0 0.007030

7 pregnant\_0 0.006540

C:\Users\serei\miniconda3\python.exe C:\Users\serei\Documents\GitHub\real\_project\_15\Sereina\project\_sereina\_binary.py

Best k: 14

Best Hyperparameters: {'C': 59, 'gamma': 0.1, 'kernel': 'rbf'}

Best Feature selection: Index(['TSH', 'TT4', 'on\_thyroxine\_0', 'on\_thyroxine\_1', 'query\_hypothyroid\_0',

'query\_hypothyroid\_1', 'query\_hyperthyroid\_0', 'query\_hyperthyroid\_1',

'TSH\_measured\_0', 'TSH\_measured\_1', 'TT4\_measured\_0', 'TT4\_measured\_1',

'sex\_M', 'referral\_source\_SVHC'],

dtype='object')

Cross-Validation Scores: [0.96389646 0.94754768 0.95228357 0.9536469 0.95637355]

Average Cross-Validation Score: 0.9547496327005195

Performance of the SVM model:

Accuracy: 0.963; Precision: 0.962; Recall: 0.963; F1 score: 0.962

Top 10 features:

Feature Importance

10 TT4\_measured\_0 0.082507

11 TT4\_measured\_1 0.082507

0 TSH 0.079401

1 TT4 0.033842

4 query\_hypothyroid\_0 0.022398

5 query\_hypothyroid\_1 0.022398

6 query\_hyperthyroid\_0 0.021744

7 query\_hyperthyroid\_1 0.021744

8 TSH\_measured\_0 0.007520

9 TSH\_measured\_1 0.007520