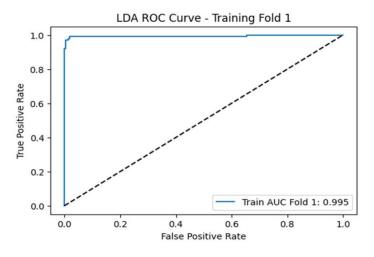
Linear and Quadratic Discriminant Analysis for Breast Cancer Detection

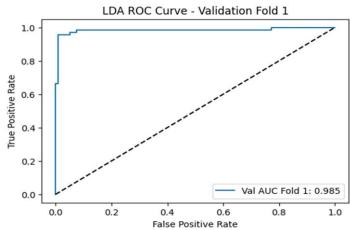
Task 1: Linear Discriminants for Breast Cancer Detection

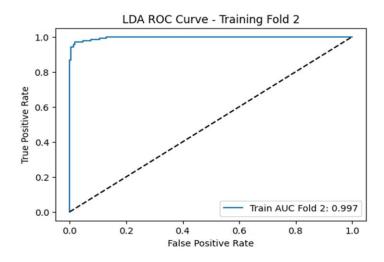
Using linear discriminants and 3-fold cross-validation, the model produced all the training and validation ROC curves (6 altogether) and calculated the average training and validation AUC, approximate EER, and d-prime.

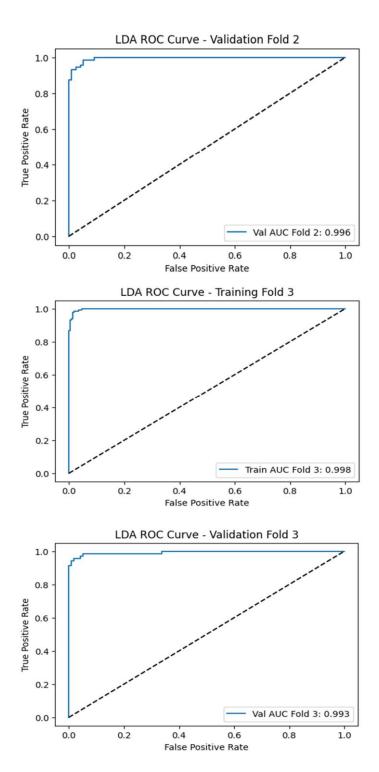
Results:

• **ROC curves**: The Linear Discriminant Analysis (LDA) with 3-fold cross-validation was successfully executed, producing ROC curves for each fold.









Metrics:

o Average training AUC: 0.997 o Validation AUC: 0.991 o EER: 0.045 o

d-prime: 5.353

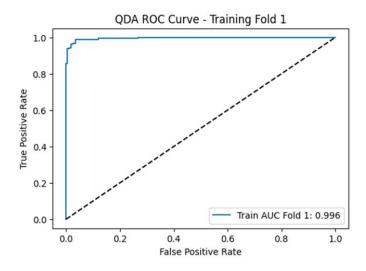
These metrics, along with the ROC curves, indicate high model performance in detecting breast cancer.

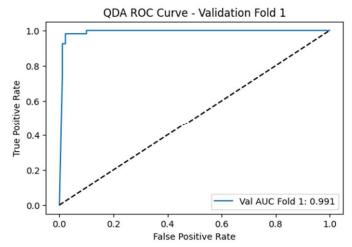
Task 2: Quadratic Discriminants for Breast Cancer Detection

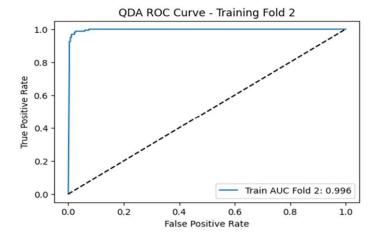
Using quadratic discriminants and 4-fold cross-validation, the model produced all the training and validation ROC curves (8 altogether) and calculated the average training and validation AUC, approximate EER, and d-prime.

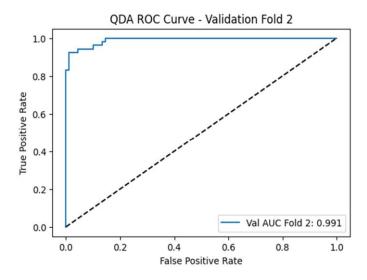
Results:

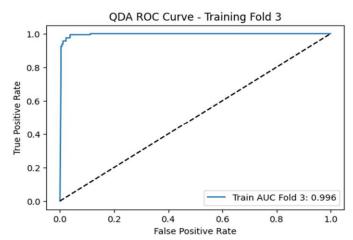
• **ROC curves**: The Quadratic Discriminant Analysis (QDA) with 4-fold cross-validation was successfully executed, producing ROC curves for each fold.

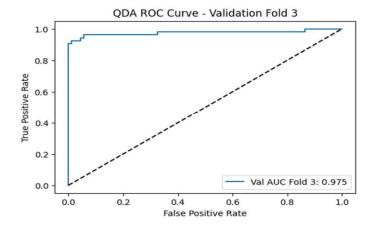


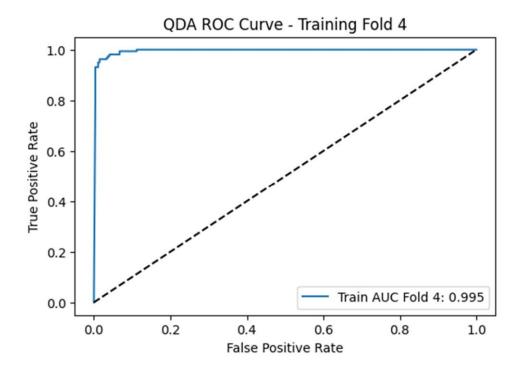


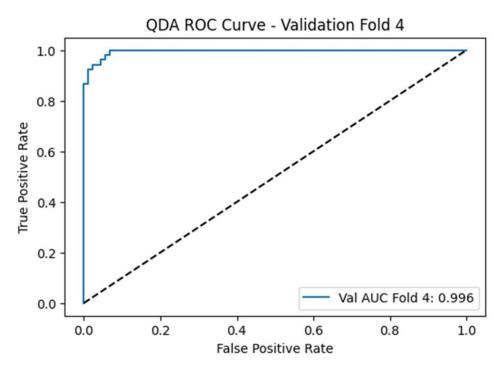












Metrics:

o Average training AUC: 0.996 o Validation AUC: 0.988 o EER: 0.042 o

d-prime: 5.835

These metrics, along with the ROC curves, demonstrate the model's robustness and effectiveness in classifying breast cancer.