

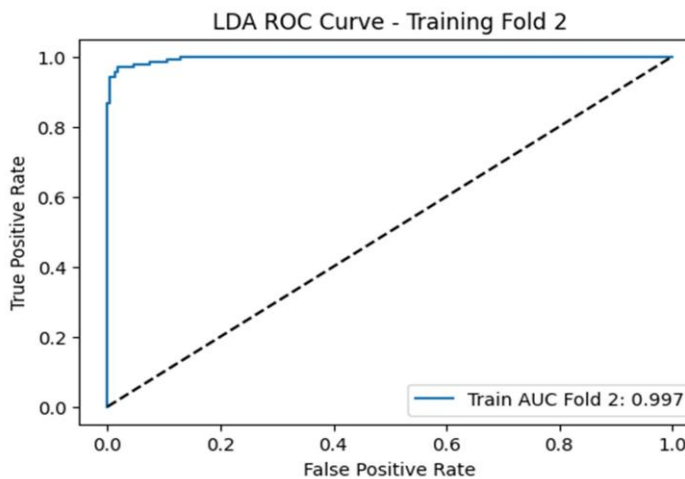
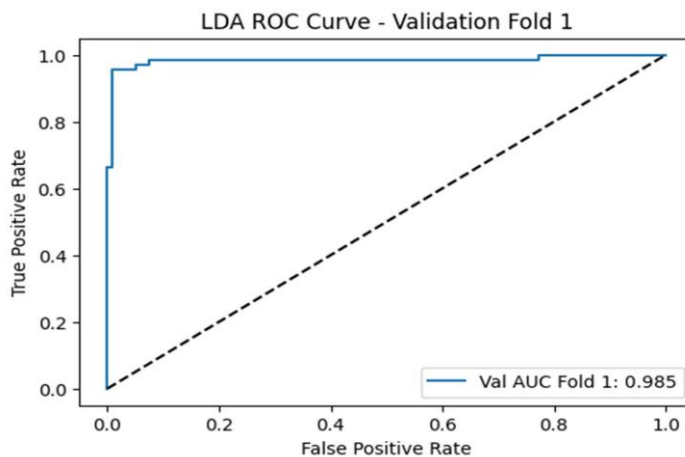
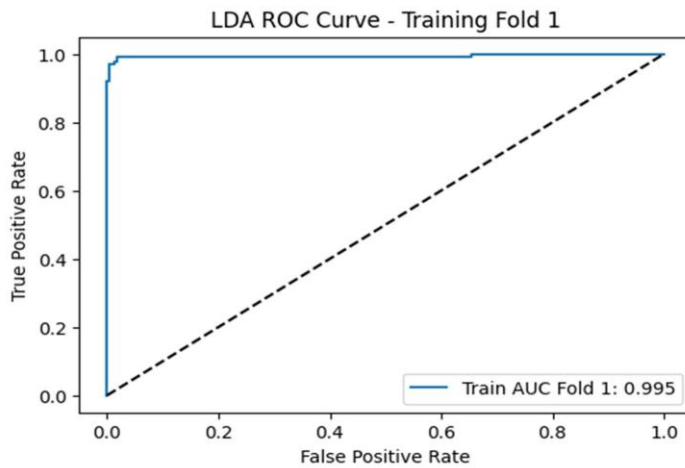
Linear and Quadratic Discriminant Analysis for Breast Cancer Detection

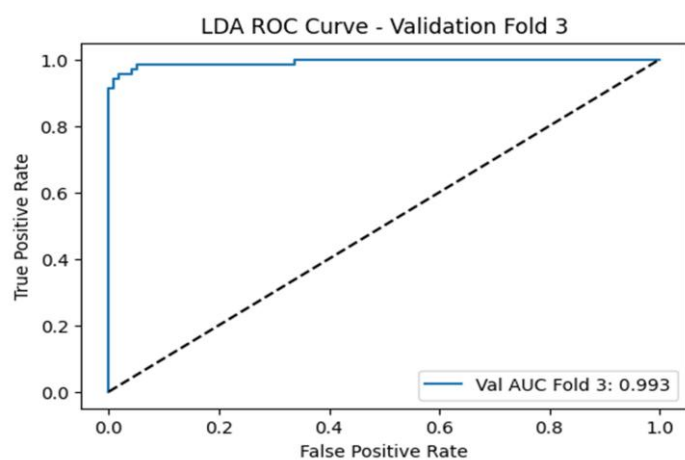
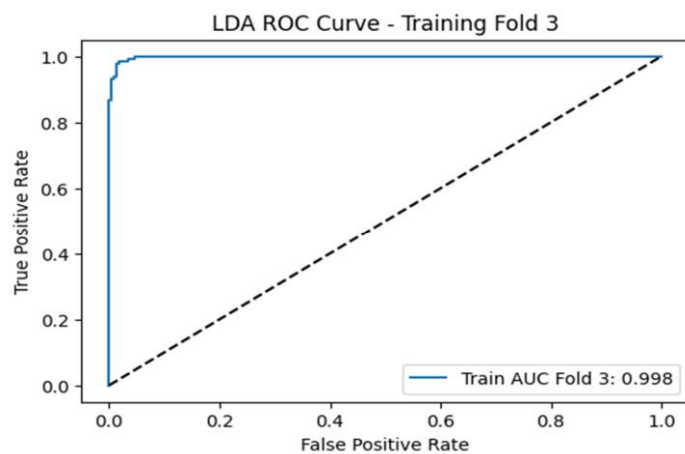
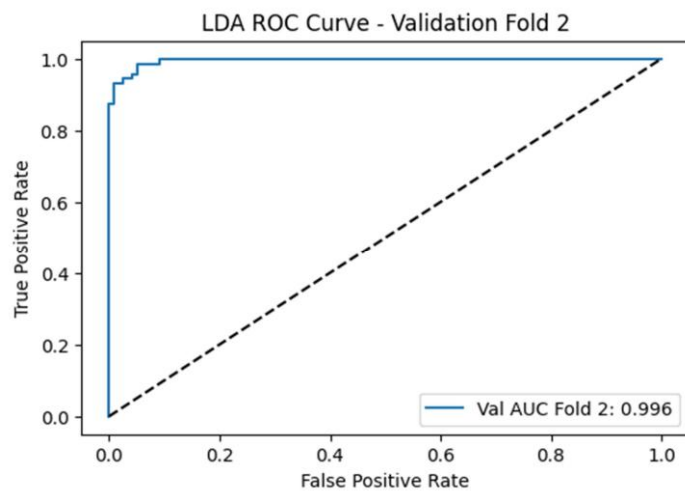
Task 1: Linear Discriminants for Breast Cancer Detection

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:**
 - Average training AUC: 0.997
 - Validation AUC: 0.991
 - EER: 0.045
 - d-prime: 5.353

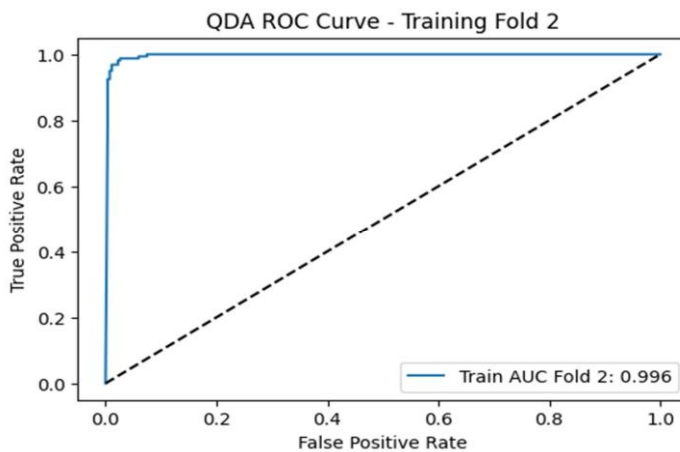
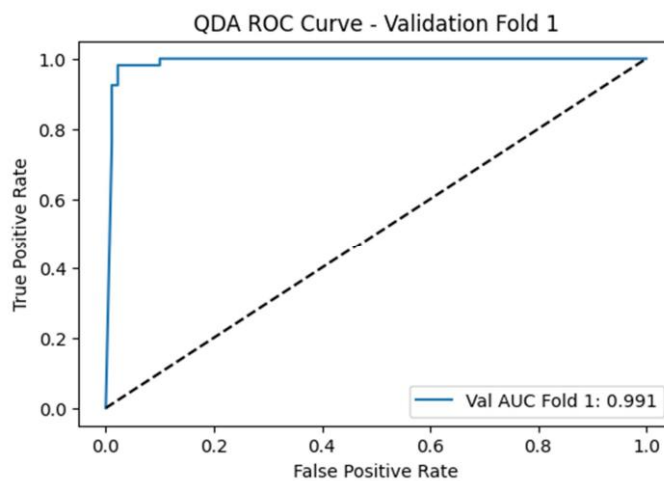
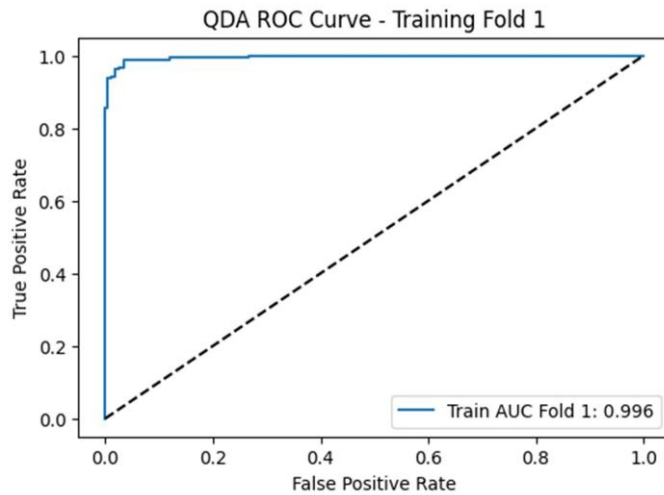
These metrics, along with the ROC curves, indicate high model performance in detecting breast cancer.

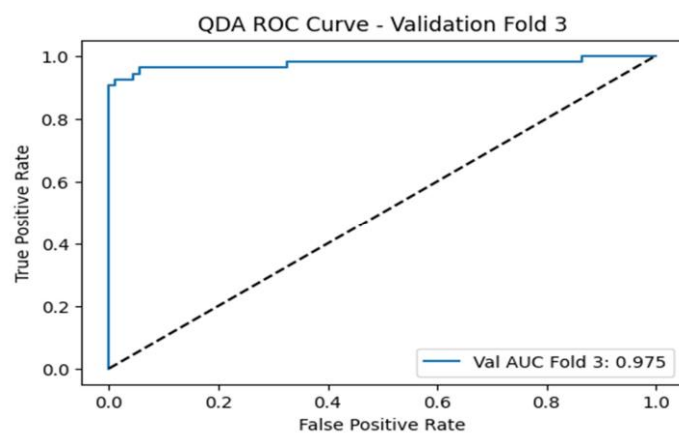
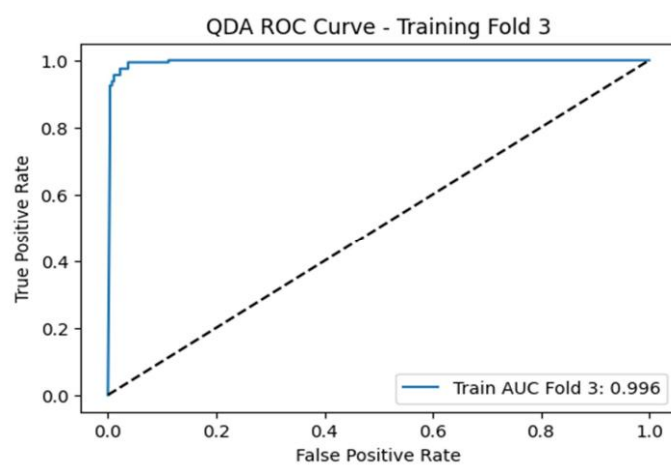
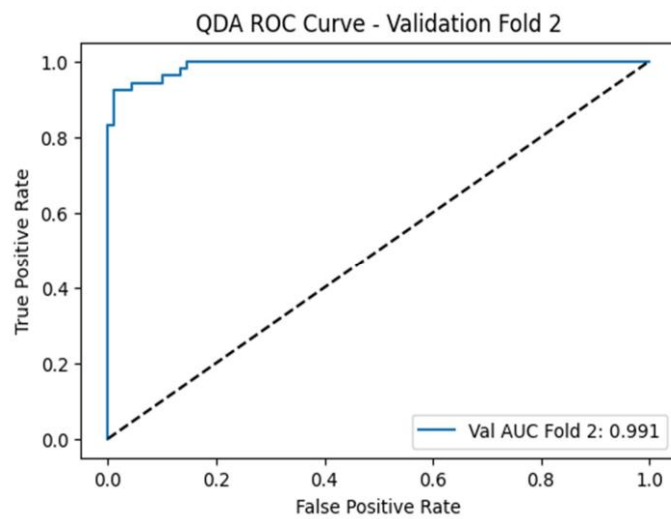
Task 2: Quadratic Discriminants for Breast Cancer Detection

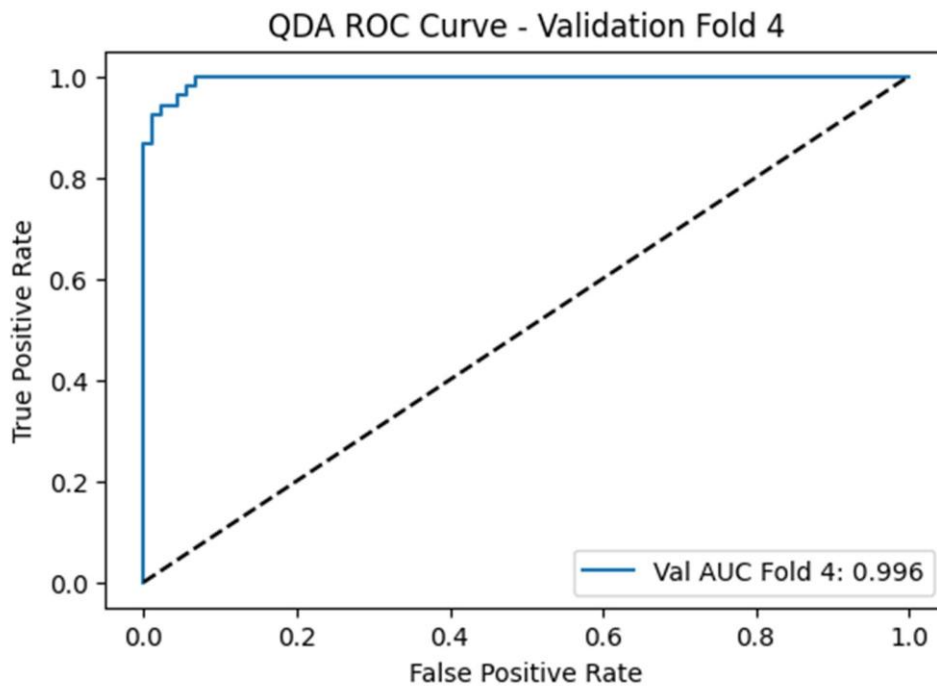
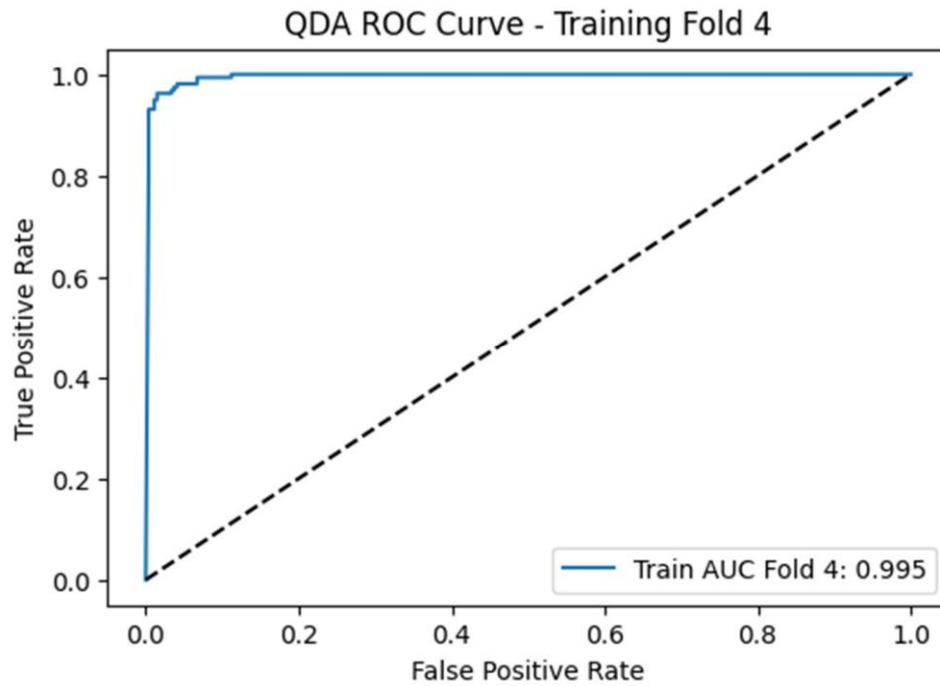
Using quadratic discriminants and 4-fold cross-validation, the model produced all the training and validation ROC curves (8 altogether) and calculated the average training and validation AUC, approximate EER, and d-prime.

Results:

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







- **Metrics:**
 - Average training AUC: 0.996
 - Validation AUC: 0.988
 - EER: 0.042
 - d-prime: 5.835

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