==========

Decision Tree

Accuracy: **0.9357142857142857 (93.57%)**

Confusion Matrix:

[[91 1]

[8 40]]

Classification Report:

	precision	recall	f1-score	support
0	0.92	0.99	0.95	92
1	0.98	0.83	0.90	48
accuracy			0.94	140
macro avg	0.95	0.91	0.93	140
weighted avg	0.94	0.94	0.93	140

==========

Random Forest

Accuracy**: 0.9714285714285714 (97.14%)**

Confusion Matrix:

[[92 0]

[4 44]]

Classification Report:

	precision	recall	f1-score	support
0	0.96	1.00	0.98	92
1	1.00	0.92	0.96	48
accuracy			0.97	140
macro avg	0.98	0.96	0.97	140
weighted avg	0.97	0.97	0.97	140

==========

Gradient Boosting

Accuracy: **0.9785714285714285 (97.85%)**

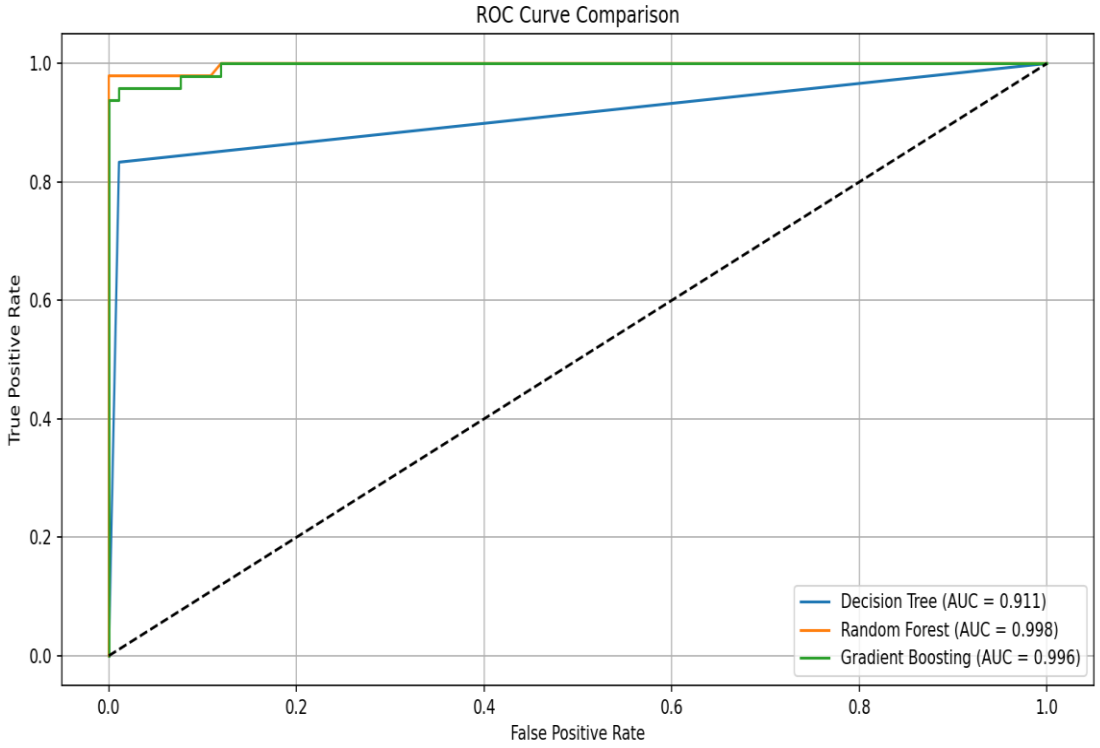
Confusion Matrix:

[[92 0]

[3 45]]

Classification Report:

	precision	recall	f1-score	support
0	0.97	1.00	0.98	92
1	1.00	0.94	0.97	48
accuracy			0.98	140
macro avg	0.98	0.97	0.98	140
weighted avg	0.98	0.98	0.98	140



CONCLUSION :

A **Decision Tree** is simple and interpretable but showed slightly lower accuracy and recall, which means it may miss some malignant cases.

Random Forest, an ensemble of decision trees, significantly improved the performance by reducing overfitting and increasing stability. It achieved high accuracy and precision, correctly classifying most malignant and benign tumors.

Gradient Boosting performed the best overall, with the **highest accuracy, recall, and F1-score**, and the best balance between correctly identifying malignant cases and minimizing false positives.

The **ROC curve comparison** showed that ensemble methods (Random Forest and Gradient Boosting) have higher AUC values compared to a single Decision Tree.