Table S1 The features retained after each feature dimension reduction were as follows:

| Modality (features number) | Univariate Cox regression | Spearman's and Pearson's correlation analysis | LASSO |
|----------------------------|---------------------------|---------------------------------------------|-------|
| DFS                        |                           |                                             |       |
| CT and MRI (5589)          | 269                       | 43                                          | 17    |
| CT (2751)                  | 26                        | 12                                          | 7     |
| MRI (2838)                 | 243                       | 32                                          | 12    |
| OS                         |                           |                                             |       |
| CT and MRI (5589)          | 750                       | 55                                          | 17    |
| CT (2751)                  | 72                        | 13                                          | 8     |
| MRI (2838)                 | 187                       | 37                                          | 16    |

DFS, disease-free survival; OS, overall survival; LASSO, Least absolute shrinkage and selection operator

Table S2 Radiomic features with non-zero coefficients selected by LASSO analysis.

| CT_DFS                                      | Radomic features                      | Shape |
|---------------------------------------------|---------------------------------------|-------|
| Original_shape_Sphericity                   |                                       |       |
| Wavelet_HLH_firstorder_RootMeanSquared      | Firstorder                             |       |
| Wavelet_HLL_firstorder_Mean                 | Firstorder                             |       |
| Log_sigma_3_0_mm_3D_firstorder_Maximum      | Firstorder                             |       |
| Wavelet_HHL_glszm_GrayLevelNonUniformityNormalized | GLSZM              |       |
| Wavelet_HLL_glszm_SizeZoneNonUniformityNormalized | GLSZM              |       |
| Original_gldm_DependenceNonUniformityNormalized | GLDM              |       |
| MRI_DFS                                     |                                       |       |
| Wavelet_LHH_firstorder_RootMeanSquared      | Firstorder                             |       |
| Wavelet_LHH_firstorder_Skewness             | Firstorder                             |       |
| Wavelet_HHL_firstorder_Skewness             | Firstorder                             |       |
| Wavelet_LLH_glszm_ZoneVariance              | GLSZM                                 |       |
| Wavelet_HHL_glszm_ZonePercentage            | GLSZM                                 |       |
| Wavelet_LHL_firstorder_Median               | Firstorder                             |       |
| Wavelet_LLL_glcm_ClusterShade               | GLCM                                  |       |
| Log_sigma_5_0_mm_3D_glcm_Contrast           | GLCM                                  |       |
| Original_glcm_Correlation                   | GLCM                                  |       |
| Wavelet_HLL_glcm_ClusterProminence          | GLCM                                  |       |
| Wavelet_HHH_glcm_lmc2                       | GLCM                                  |       |
| Log_sigma_2_0_mm_3D_firstorder_RootMeanSquared | Firstorder                             |       |
| Combined_DFS                                |                                       |       |
| Wavelet_LHH_firstorder_RootMeanSquared      | Firstorder                             |       |
| Original_shape_Sphericity                   | Shape                                 |       |
| Wavelet_HLH_firstorder_RootMeanSquared      | Firstorder                             |       |
| Wavelet_LHH_firstorder_Skewness             | Firstorder                             |       |
| Original_shape_Flatness                     | Shape                                 |       |
| Wavelet_HLL_firstorder_Mean                 | Firstorder                             |       |
| Original_glcm_Correlation                   | GLCM                                  |       |
| Wavelet_LHH_glszm_SmallAreaEmphasis         | GLSZM                                 |       |
| Log_sigma_5_0_mm_3D_firstorder_Kurtosis     | Firstorder                             |       |
| Feature                                      | Module       |
|----------------------------------------------|--------------|
| Log\_sigma\_2\_0\_mm\_3D\_firstorder\_RootMeanSquared | Firstorder   |
| Wavelet\_HLL\_glcm\_ClusterProminence       | GLCM         |
| Wavelet\_HLL\_glszm\_SizeZoneNonUniformityNormalized | GLSZM        |
| Wavelet\_HHL\_glszm\_ZonePercentage         | GLSZM        |
| Wavelet\_HHH\_glcm\_Lnc2                    | GLCM         |
| Wavelet\_LLL\_glcm\_ClusterShade            | GLCM         |
| Wavelet\_HHL\_glszm\_GrayLevelNonUniformityNormalized | GLSZM        |
| Original\_gldm\_DependenceNonUniformityNormalized | GLDM        |
| CT\_OS                                       |              |
| Wavelet\_LHL\_glszm\_SmallAreaEmphasis      | GLSZM        |
| Wavelet\_HLH\_gldm\_DependenceVariance      | GLDM         |
| Log\_sigma\_5\_0\_mm\_3D\_glszm\_SizeZoneNonUniformityNormalized | GLSZM        |
| Wavelet\_LHL\_glszm\_SmallAreaLowGrayLevelEmphasis | GLSZM        |
| Wavelet\_HHH\_glcm\_Idn                     | GLCM         |
| Wavelet\_HLH\_firstorder\_Variance          | Firstorder   |
| Log\_sigma\_5\_0\_mm\_3D\_firstorder\_90Percentile | Firstorder   |
| Log\_sigma\_4\_0\_mm\_3D\_grrl\_ShortRunHighGrayLevelEmphasis | GLRLM        |
| MRI\_OS                                      |              |
| Wavelet\_HLH\_glszm\_ZonePercentage         | GLSZM        |
| Wavelet\_HLH\_firstorder\_Skewness          | Firstorder   |
| Log\_sigma\_5\_0\_mm\_3D\_firstorder\_Skewness | Firstorder   |
| Wavelet\_HHL\_glcm\_ClusterShade            | GLSZM        |
| Wavelet\_LHL\_glszm\_SmallAreaLowGrayLevelEmphasis | GLSZM        |
| Wavelet\_HLH\_glszm\_GrayLevelNonUniformityNormalized | GLSZM        |
| Wavelet\_LLH\_glszm\_LowGrayLevelZoneEmphasis | GLSZM        |
| Wavelet\_HLH\_glszm\_GrayLevelNonUniformityNormalized | GLSZM        |
| Wavelet\_HLH\_glszm\_SmallAreaEmphasis      | GLSZM        |
| Wavelet\_LHL\_glcm\_ClusterProminence       | GLCM         |
| Wavelet\_HLH\_glszm\_LargeAreaLowGrayLevelEmphasis | GLSZM        |
| Log\_sigma\_2\_0\_mm\_3D\_firstorder\_90Percentile | Firstorder   |
| Wavelet\_LLH\_firstorder\_Kurtosis          | Firstorder   |
| Wavelet\_HLL\_firstorder\_Kurtosis          | Firstorder   |
| Wavelet\_HLH\_glszm\_ZonePercentage         | GLSZM        |
| Wavelet\_LLH\_glcm\_ClusterProminence       | GLCM         |
| Combined\_OS                                 |              |
| Wavelet\_HLH\_glszm\_ZonePercentage         | GLSZM        |
| Wavelet\_LHL\_glszm\_SmallAreaLowGrayLevelEmphasis | GLSZM        |
| Wavelet\_HLH\_glszm\_GrayLevelNonUniformityNormalized | GLSZM        |
| Wavelet\_LHL\_glszm\_SmallAreaEmphasis      | GLSZM        |
| Log\_sigma\_5\_0\_mm\_3D\_firstorder\_Skewness | GLSZM        |
| Log\_sigma\_5\_0\_mm\_3D\_glszm\_SizeZoneNonUniformityNormalized | GLSZM        |
| Wavelet\_HLL\_firstorder\_Skewness          | Firstorder   |
| Wavelet\_HLH\_glcm\_ClusterShade            | GLCM         |
| Wavelet\_HLH\_glszm\_SmallAreaEmphasis      | GLSZM        |
| Log\_sigma\_2\_0\_mm\_3D\_firstorder\_90Percentile | Firstorder   |
| Log\_sigma\_5\_0\_mm\_3D\_firstorder\_90Percentile | Firstorder   |
| Log\_sigma\_3\_0\_mm\_3D\_glszm\_GrayLevelVariance | GLSZM        |
Wavelet_HLH_glszm_LargeAreaLowGrayLevelEmphasis
Log_sigma_4_0_mm_3D_glcm_ClusterProminence
Wavelet_HHL_firstorder_Kurtosis
Wavelet_HHL_glcm_ClusterProminence
Wavelet_LLH_firstorder_Kurtosis

DFS, disease-free survival; OS, overall survival; GLDM, gray-level dependence matrix-based features; GLCM, gray-level co-occurrence features matrix-based features; GLSZM gray-level size zone matrix-based features; GLRLM, gray-level run length matrix-based features.

Figure S1. Multimodal (MRI/CT) radiomics feature selection (A) Combined_ DFS, (B) Combined_ OS. Tuning parameter (Lambda) selection in LASSO involved the use of tenfold cross-validation with minimum criteria. Lambda values (A = 0.088; B = 0.084) were selected as optimal and corresponding vertical lines drawn.