

Segmentation Labels and Radiomic Features for the Pre-operative Scans of the TCGA-GBM collection (BraTS-TCGA-GBM)

Description

This data container describes both computer-aided and manually-corrected segmentation labels for the pre-operative multi-institutional scans of [The Cancer Genome Atlas \(TCGA\) Glioblastoma Multiforme \(GBM\)](#) collection, publicly available in The Cancer Imaging Archive (TCIA), coupled with a rich panel of radiomic features along with their corresponding skull-stripped and co-registered multimodal (i.e. T1, T1-Gd, T2, T2-FLAIR) magnetic resonance imaging (MRI) volumes in NIFTI format. Pre-operative multimodal MRI scans were identified in the TCGA-GBM collection via radiological assessment. These scans were initially skull-stripped and co-registered, before their tumor segmentation labels were produced by an automated hybrid generative-discriminative method, ranked first during the International multimodal BRAIn Tumor Segmentation challenge (BRATS 2015). These segmentation labels were revised and any label misclassifications were manually corrected by an expert board-certified neuroradiologist. The final labels were used to extract a rich panel of imaging features, including intensity, volumetric, morphologic, histogram-based and textural parameters, as well as spatial information and diffusion properties extracted from glioma growth models. The generated computer-aided and manually-revised labels enable quantitative computational and clinical studies without the need to repeat manual annotations whilst allowing for comparison across studies. They can also serve as a set of manually-annotated gold standard labels for performance evaluation in computational challenges. The provided panel of radiomic features may facilitate research integrative of the molecular characterization offered by TCGA, and hence allow associations with molecular markers, clinical outcomes, treatment responses and other endpoints, by researchers without sufficient computational background to extract such features.

Data Access

Data Access

Data Type	Download all or Query/Filter	License
Processed NIFTI images with segmentations and radiomic features (NIFTI, csv, zip, 767 MB, 102 subjects, 607 images)	Download (Download and apply the IBM-Aspera-Connect plugin to your browser.)	CC BY 3.0
BRATS 2017 Test Data Set (NIFTI, csv, zip, 255 MB, 33 subjects, 197 images)	Please contact the helpdesk to request access to these files.	TCIA Restricted

Click the Versions tab for more info about data releases.

Collections Used in this Third Party Analysis

Below is a list of the Collections used in these analyses:

Source Data Type	Download all or Query/Filter	License
Corresponding Original Images from TCGA-GBM (DICOM, 6 GB, 135 subjects)	Download (Requires NBIA Data Retriever .)	TCIA Restricted

- [TCGA-GBM](#)

Please contact help@cancerimagingarchive.net with any questions regarding usage.

Detailed Description

Detailed Description

Data resulting from this experiment is available in the following formats:

- (source data in DICOM image format)
- Processed images with segmentations (NIFTI) and radiomic features (CSV):
 - Training Processed images with segmentations and radiomic features - 102 subjects (NIFTI, zip, 780 MB) and a CSV of radiomic features
 - BraTS Test Data Set - 33 subjects (NIFTI, zip, 259 MB) and a CSV of radiomic features

Data resulting from this experiment is available in the following formats:

- DICOM image format
- Processed NIFTI images with segmentations and radiomic features

Citations & Data Usage Policy

Citations & Data Usage Policy

Users must abide by the [TCIA Data Usage Policy and Restrictions](#). Attribution should include references to the following citations:



Data Citation

Bakas S, Akbari H, Sotiras A, Bilello M, Rozycki M, Kirby J, Freymann J, Farahani K, Davatzikos C. (2017). **Segmentation Labels for the Pre-operative Scans of the TCGA-GBM collection [Data set]**. The Cancer Imaging Archive. DOI: [10.7937/K9/TCIA.2017.KLXWJJ1Q](https://doi.org/10.7937/K9/TCIA.2017.KLXWJJ1Q)



Publication Citation

Bakas S, Akbari H, Sotiras A, Bilello M, Rozycki M, Kirby J, Freymann J, Farahani K, Davatzikos C. (2017) **Advancing The Cancer Genome Atlas glioma MRI collections with expert segmentation labels and radiomic features** Nature Scientific Data, 4:170117 DOI: [10.1038/sdata.2017.117](https://doi.org/10.1038/sdata.2017.117)



TCIA Citation



Clark K, Vendt B, Smith K, Freymann J, Kirby J, Koppel P, Moore S, Phillips S, Maffitt D, Pringle M, Tarbox L, Prior F. **The Cancer Imaging Archive (TCIA): Maintaining and Operating a Public Information Repository**, Journal of Digital Imaging, Volume 26, Number 6, December, 2013, pp 1045-1057. DOI: [10.1007/s10278-013-9622-7](https://doi.org/10.1007/s10278-013-9622-7)

Other Publications Using This Data

TCIA maintains [a list of publications](#) which leverage TCIA data. If you have a publications you'd like to add please [contact TCIA's Helpdesk](#).

Versions

Version 1 (Current): Updated 2017/07/17

Data Type	Download all or Query/Filter
Images - 135 subjects (DICOM, 6 GB)	<div> Download</div> <p>Note: This collection contains data that could potentially be used to reconstruct a human face. To safeguard the privacy of participants, users must sign and submit a TCIA Limited Access License to help@cancerimagingarchive.net before accessing the data.</p>
Processed NIFTI images with segmentations and radiomic features - 102 subjects (NIFTI, 767 MB)	<div> Download</div> <p>Download and apply the IBM-Aspera-Connect plugin to your browser to access the data.</p>
BRATS 2018 Test Data Set - 33 subjects (NIFTI, 255 MB)	Please contact the helpdesk to request access to these files.