Segmentation Labels and Radiomic Features for the Pre-operative Scans of the TCGA-LGG collection

Summary

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) Low Grade Glioma (LGG) 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-LGG 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

Click the **Download** button to save a ".tcia" manifest file to your computer, which you must open with the NBIA Data Retriever

Data Type	Download all or Query/Filter
Images - 108 Subjects (DICOM, 8.5 GB)	Download
Processed images with segmentations and radiomic features - 65 subjects (NIFTI, 536 MB)	Download
BRATS 2018 Test Data Set - 43 subjects (NIFTI, 366 MB)	Please contact the helpdesk to request access to these files.

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

Detailed Description

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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

Data Citation

Bakas S, Akbari H, Sotiras A, Bilello M, Rozycki M, Kirby J, Freymann J, Farahani K, Davatzikos C. (2017) **Segmentation Labels and Radiomic Features for the Pre-operative Scans of the TCGA-LGG collection** [Data Set]. The Cancer Imaging Archive. DOI: 10.7937/K9/TCIA.2017.GJQ7R0EF

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

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. T **he Cancer Imaging Archive (TCIA): Maintaining and Operating a Public Information Repository** , Journal of Digital Imaging, Volume 26, Number 6, December, 2013, pp 1045-1057. (paper)

Other Publications Using This Data

TCIA maintains a list of publications that leverage TCIA data. If you have a manuscript you'd like to add please contact the TCIA Helpdesk.

Versions

Version 1 (Current): 2017/07/17

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