A Method for Automatic Segmentation and Quantitative Parameterization of a Tumor

Tech ID: 25150 / UC Case 2014-165-0

BACKGROUND

Archives of glioblastoma (GBM) imaging and genomic data present an unprecedented potential for the clinical evaluation of tumor progression and the identification of novel imaging biomarkers. Reliable automatic segmentation of brain tumors will prove invaluable in this regard.

TECHNOLOGY DESCRIPTION

Researchers from UC San Diego have developed an automated method that identifies and labels brain tumor-associated pathology by using an iterative probabilistic voxel labeling using k-nearest neighbor and Gaussian mixture model classification. This technology comprises a robust, automated segmentation algorithm for the quantitative analysis of large imaging datasets. Iterative probabilistic voxel labeling defined tumor volumes were highly consistent with operator-defined volumes (Steed et. al. 2015).

Application of this algorithm include noninvasive quantitative evaluation of brain tumor clinical trials capable of reproducibility for multisite projects, using different imaging devices and suitable for a multiyear study. Other applications include imaging biomarkers to identify specific mutations, identify brain tumor subtypes, assess prognosis and assisting in surgical planning and may also be used for non-tumor assessment, e.g. brain injury and trauma.

RELATED MATERIALS

- Steed TC, Treiber JM, Patel KS, Taich Z, White NS, Treiber ML, Farid N, Carter BS, Dale AM, Chen CC. Iterative probabilistic voxel labeling: automated segmentation for analysis of The Cancer Imaging Archive glioblastoma images. AJNR Am J Neuroradiol. 2015 Apr;36(4):678-85 - 11/20/2014

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,169,685	01/01/2019	2014-165

CONTACT

University of California, San Diego
Office of Innovation and Commercialization
innovation@ucsd.edu
tel: 858.534.5815.

OTHER INFORMATION

CATEGORIZED AS

- **Imaging**
  - Medical
  - Software
- **Medical**
  - Disease: Cancer

RELATED CASES

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