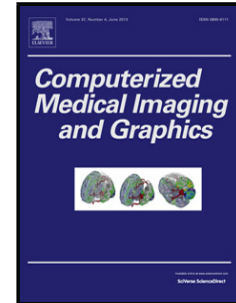


Accepted Manuscript

Title: Survey of automated multiple sclerosis lesion segmentation techniques on magnetic resonance imaging

Author: Antonios Danelakis Theoharis Theoharis Dimitrios A. Verganelakis



PII: S0895-6111(18)30322-7
DOI: <https://doi.org/doi:10.1016/j.compmedimag.2018.10.002>
Reference: CMIG 1598

To appear in: *Computerized Medical Imaging and Graphics*

Received date: 25-5-2018
Revised date: 5-9-2018
Accepted date: 2-10-2018

Please cite this article as: Antonios Danelakis, Theoharis Theoharis, Dimitrios A. Verganelakis, Survey of automated multiple sclerosis lesion segmentation techniques on magnetic resonance imaging, *Computerized Medical Imaging and Graphics* (2018), <https://doi.org/10.1016/j.compmedimag.2018.10.002>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Survey of automated multiple sclerosis lesion segmentation techniques on magnetic resonance imaging

Antonios Danelakis^{a,*}, Theoharis Theoharis^a, Dimitrios A. Verganelakis^b

^a*Department of Computer & Information Science, Norwegian University of Science & Technology, Sem Saelands vei 7-9, NO-7491 Trondheim, Norway*

^b*Nuclear Medicine Department, Oncology Clinic 'ELPIDA', Children's Hospital 'A. Sofia', Goudi Greece.*

Abstract

Multiple Sclerosis (*MS*) is a chronic disease. It affects the central nervous system and its clinical manifestation can variate. Magnetic Resonance Imaging (*MRI*) is often used to detect, characterize and quantify *MS* lesions in the brain, due to the detailed structural information that it can provide. Manual detection and measurement of *MS* lesions in *MRI* data is time-consuming, subjective and prone to errors. Therefore, multiple automated methodologies for *MRI*-based *MS* lesion segmentation have been proposed. Here, a review of the state-of-the-art of automatic methods available in the literature is presented.

The current survey provides a categorization of the methodologies in existence in terms of their input data handling, their main strategy of segmentation and their type of supervision. The strengths and weaknesses of each category are analyzed and explicitly discussed. The positive and negative aspects of the methods are highlighted, pointing out the future trends and, thus, leading to possible promising directions for future research. In addition, a further clustering of the methods, based on the databases used for their evaluation, is provided. The aforementioned clustering achieves a reliable comparison among methods evaluated on the same databases.

*Corresponding author

Email addresses: antonios.danelakis@ntnu.no (Antonios Danelakis),
theotheo@ntnu.no (Theoharis Theoharis), dimitris.verganelakis@gmail.com (Dimitrios A. Verganelakis)

Download English Version:

<https://daneshyari.com/en/article/11263414>

Download Persian Version:

<https://daneshyari.com/article/11263414>

[Daneshyari.com](https://daneshyari.com)