# Article information:

Automatic segmentation approach to extracting neonatal cerebral ventricles from 3D ultrasound images - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S1361841516301153?via%3Dihub>

# Article summary:

1. This paper proposes an automatic segmentation approach to extract the ventricular system of preterm neonates from 3D US images.

2. The proposed segmentation approach uses phase congruency map, multi-atlas initialization technique, atlas selection strategy, and a multiphase geodesic level-sets (MGLS) evolution combined with a spatial shape prior derived from multiple pre-segmented atlases.

3. Experimental results using 30 IVH patient images show that the proposed GPU-implemented approach is accurate in terms of the Dice similarity coefficient (DSC), the mean absolute surface distance (MAD), and maximum absolute surface distance (MAXD).

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

This article presents an automatic segmentation approach to extract the ventricular system of preterm neonates from 3D US images. The proposed segmentation approach makes use of phase congruency map, multi-atlas initialization technique, atlas selection strategy, and a multiphase geodesic level-sets (MGLS) evolution combined with a spatial shape prior derived from multiple pre-segmented atlases. The authors claim that their experimental results using 30 IVH patient images show that the proposed GPU-implemented approach is accurate in terms of the Dice similarity coefficient (DSC), the mean absolute surface distance (MAD), and maximum absolute surface distance (MAXD).

The article appears to be reliable and trustworthy as it provides detailed information on its methodology and results. However, there are some potential biases in the article which should be noted. Firstly, there is no mention of any control group or comparison group used in this study which could have provided more insight into how effective this method is compared to other methods or techniques for extracting neonatal cerebral ventricles from 3D ultrasound images. Secondly, there is no discussion on potential risks associated with this method such as misdiagnosis due to inaccurate segmentation or incorrect interpretation of results due to lack of experience or expertise in interpreting 3D ultrasound images. Additionally, while the authors provide evidence for their claims regarding accuracy of their proposed method, they do not provide any evidence for their claims regarding its effectiveness in clinical settings or its potential applications in medical practice. Finally, while this paper reports on a novel automated segmentation approach for extracting neonatal cerebral ventricles from 3D US images, it does not explore any counterarguments or alternative approaches which could have been beneficial for providing a more comprehensive overview of this topic.

# Topics for further research:

* Neonatal cerebral ventricles segmentation
* 3D ultrasound image segmentation
* Automated segmentation approaches
* Accuracy of segmentation methods
* Clinical applications of segmentation
* Alternative segmentation approaches

# Report location:

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