

**Review Form 1.7**

Journal Name:	<b>Asian Journal of Research in Computer Science</b>
Manuscript Number:	<b>Ms_AJRCOS_104270</b>
Title of the Manuscript:	<b>The Techniques Used in Mitosis Detection in Breast Cancer Histopathology Images. A Survey</b>
Type of the Article	<b>Review Article</b>

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**PART 1: Review Comments**

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p><b>Compulsory</b> REVISION comments</p> <ol style="list-style-type: none"> <li><b>Is the manuscript important for scientific community?</b> (Please write few sentences on this manuscript)</li> <li><b>Is the title of the article suitable?</b> (If not please suggest an alternative title)</li> <li><b>Is the abstract of the article comprehensive?</b></li> <li><b>Are subsections and structure of the manuscript appropriate?</b></li> <li><b>Do you think the manuscript is scientifically correct?</b></li> <li><b>Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.</b></li> </ol> <p><u>(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)</u></p>	<p>I am happy to greet you and send you my concepts about the excellent article you have sent me, which I recommend to publish in the journal.</p> <p>Breast cancer is the second cause of death around the world after heart disease, and it is the primary cause of death for women. The early diagnosis of breast cancer can reduce the death rate, as early diagnosis and treatment at the right time can increase the patient's chance of survival. The discovery of the mitotic number is one of the necessary procedures that must be performed for a person suffering from breast cancer because it is an important marker for determining the aggressiveness of the tumor. According to the Nottingham scale, it gives 3 degrees to determine the degree of the tumor, whether it is of the first degree, the second degree, or the third degree of seriousness. Deep learning algorithms have many contributions in the medical fields, including in the field of mitotic number discovery, as the mitotic number process is a difficult and tiring task that requires time and effort from pathologists (diagnostic doctors), because the work environment is under microscopes with high magnification degrees, for this reason deep learning techniques were used to reduce the burden on diagnostic doctors and save time for the patient to know the result of his examination, as the biopsy results in developed countries take from 10 days to two weeks for the results to appear. In this survey we will review the deep learning techniques that were used to detect the mitotic number.</p> <p>The abstract discusses the importance of early diagnosis in breast cancer to reduce death rates, as it is a leading cause of death for women worldwide. The mitotic number is a crucial marker for determining the tumor's aggressiveness, and the Nottingham scale categorizes tumors based on their seriousness. Deep learning algorithms have shown promise in the medical field, including the detection of mitotic numbers, which can be a challenging and time-consuming task for pathologists. Using deep learning techniques can ease the burden on diagnostic doctors, save time for patients waiting for biopsy results, and potentially improve patient outcomes. The survey will focus on reviewing the deep learning methods employed for mitotic number detection in breast cancer cases.</p> <p>The introduction provides a comprehensive overview of breast cancer and the significance of early diagnosis. It highlights that breast cancer is a prevalent and serious health issue worldwide, necessitating accurate grading for proper treatment planning. The Nottingham grading system, which includes the mitotic count, is a crucial tool for determining tumor aggressiveness. The abstract emphasizes the importance of deep learning techniques in detecting the mitotic number, as it can save time for pathologists and patients waiting for biopsy results.</p> <p>Additionally, the introduction touches upon the challenges faced in diagnosing breast cancer, both manually and computationally. Maintaining a standard data preparation environment and distinguishing mitotic cells from normal or apoptotic cells pose significant difficulties. Deep learning, particularly convolutional neural networks (CNNs), is presented as a promising approach to address these challenges and improve mitotic number detection.</p> <p>The discussions section emphasizes the significant contributions of artificial intelligence (AI) technologies, particularly in the medical field, where digital pathology has provided new opportunities for computational techniques. The use of full-slide imaging (WSI) technology has accelerated the transition to digital pathology, allowing for more efficient and accurate analysis of pathology slides.</p> <p>The conclusions highlight the growing interest in mitotic detection research and the existence of Mitosis Detection Challenge competitions that encourage researchers to</p>	

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	<p>work on this problem and provide them with datasets. The survey divides mitosis detection methods into two sections based on the features used and the formulation of the problem as either a classification, semantic segmentation, or object detection task. It points out that deep learning methods, particularly convolutional neural networks (CNNs), have shown better results in segmentation and classification tasks compared to traditional methods in medical image analysis.</p> <p>The references section provides a comprehensive list of sources, including research papers, datasets, and competitions, supporting the information presented in the survey.</p> <p>Overall, the discussions and conclusions sections provide a comprehensive overview of the importance of AI in mitotic detection, the existing challenges, and the progress made using deep learning techniques. The references provided are valuable resources for further exploration of the topic.</p>	
<p><b>Minor</b> REVISION comments</p> <p>1. Is language/English quality of the article suitable for scholarly communications?</p>		
<p><b>Optional/General</b> comments</p>		

**PART 2:**

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p>Are there ethical issues in this manuscript?</p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

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