

عنوان مقاله:

A New Method for Sperm Detection in Infertility Cure: Hypothesis Testing Based on Fuzzy Entropy Decision

محل انتشار:

مجله نوآوری های مهندسی برق و کامپیوتر، دوره 2، شماره 2 (سال: 1393)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

In this paper, a new method is introduced for sperm detection in microscopic images for infertility treatment. In this method, firstly a hypothesis testing function is defined to separate sperms from plasma, non-sperm semen particles and noise. Then, some primary candidates are selected for sperms by watershed-based segmentation algorithm. Finally, candidates are either confirmed or rejected using fuzzy entropy decision algorithm. Performance of the proposed method is evaluated on real captured images containing sperms and other specimens of semen in two different scenarios. In the first scenario, semen has low density of sperms however the second scenario belongs to semen with high density of sperms. The obtained results show the greater ability of the proposed method in sperm detection compared to present approaches in both of scenarios. Furthermore, it is shown that 8% and 15% improvements in sperm detection in the first and second scenarios can be achieved by the proposed algorithm. As the final results, the proposed algorithm not only doesn't lead to extract more false objects but also decrease the rate of false detections are decreased compared to existing algorithms.

کلمات کلیدی:

Sperm detection, Microscopic image, Hypothesis testing, Fuzzy entropy decision

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