

Title: Development of Motion and Tail Detection Method for Computer Assisted Sperm Analysis (CASA) by Using Wavelet

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Abstract:

Sperm analysis has an important role to determine causes of infertility for men. It is necessary to find actual reasons of infertility problem. Sperm analysis techniques are mostly done with subjective criteria in laboratories. The quality and results of analysis are directly affected by experience, knowledge of laboratory assistant moreover emotional situation of him. The analysis and observations are done by laboratory assistant using high resolution microscopes. The most important mistake is optical illusion. This study discusses details of the stages implemented in an electronic tool for the objective analysis of human sperm morphology, commonly known as Computer Assisted Sperm Analysis (CASA). In the first part of this study, sperm morphology and healthy sperm characteristics are presented. And then, the detection and extraction of individual spermatozoon of an image which are captured from electron microscope are segmented and resampled by using image processing techniques. Approximation, horizontal detail, vertical detail and diagonal detail of captured scene are analyzed. Wavelet-based noise removal is applied to the modified image. The last part of this study, feature extraction and classification, estimates the morphological parameters of human spermatozoon and classifies them according to the World Healthcare Organization criteria. Proposed method will be an important role to develop new biomedical devices which are not only sperm analysis but also other tiny cell analysis.