DETECTION OF MALARIAL PARASITE IN BLOOD USING IMAGE PROCESSING

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Background:

Even though there is tremendous computerization in the field of Cell Segmentation, Feature Extraction and Classification. Still it has become necessary to improve techniques being used, so as to get better Accuracy, Sensitivity and PPV (Positive Predictive Value). This paper presents enhanced technique for Malaria Parasite Detection, where cell segmentation process consists of various steps such as image binarization, followed by Morphological Opening for the purpose of refinement. Since frequency and orientation representations of Gabor filter are same as that of human visual system, it is used for feature extraction.

Objectives:

To describe an unsupervised approach in which color and morphology based algorithms are put together to formulate an algorithm for Plasmodium vivax detection from thick smear slide. Our approach has a comparative higher predictability and lower false positive rate.

- The algorithm generated will be helpful in the area where the expert in microscopic analysis may not be available.
- The effort of the algorithm is to detect presence of parasite at any stage.
- Many images can be processed together with less time.
- Two or more algorithms are compared in this paper in order to get superior classification. Results show that our method gives better accuracy.

Specific objective:

We found that for images with lesser quality as it may happen for low cost and low resolution cameras, our proposed methodology can tackle the problem algorithmically by intelligent combination of color and light based operations. We have used unsupervised method, however possible interface with supervised method leaves the scope for further improvement of the prediction rate and decrease of the false positive rate. The scalability of the method to smart phone based microscopy platform may be another value based addition to this new diagnostic paradigm.