

## **Detection And Summation Of Pus Cells And Epithelial Cells For Sputum Quality Grading Using K-Means Clustering And Color Thresholding**

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### **Abstract**

Sputum with good quality is important in the diagnosis of many diseases. Some factor like the number of neutrophils (pus cell), squamous epithelial cell and the appearance of macroscopic should be considered to determine the sputum quality based on Bartlett's Criteria. Hence, a vision system which is able to detect and count the existence of pus cell and epithelial cell for sputum quality testing is developed. This vision system process four sputum image for each sputum sample and determine the average number of pus cells and epithelial cells in that sample. This system also able to determine either the sputum sample is positive or negative. The percentage of error for average number of pus cell is 26.3% whereas error for epithelial cell is 27.78%. However, the final grading of either the sputum sample is positive or negative is 100% accurate.

**Keywords:** image colour analysis, image segmentation, lung, medical image processing, patient diagnosis, pattern clustering