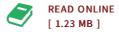# Automated Detection of Hematological Patterns Through Machine Learning

By Rossman, Mark

Condition: New. Publisher/Verlag: LAP Lambert Academic Publishing | Using Feature Extraction And Artificial Neural Networks for Pattern Recognition | The use of hematological analyzers has become routine in clinical practice, but the sheer volume of data produced by these devices often makes manual inspection of all the results an unwieldy task. For this reason, automated pattern analysis through the use of machine learning has been used in these types of situations, to save time and to provide invaluable aid to medical professionals in this area of diagnostic medicine. Toward this end, Artificial Neural Networks (ANNs) are often relied upon in the field of machine learning, because of their ability to distill representative feature components from large amounts of input data. This paper details an approach in which the scatterplots of cells that were produced by a hematological device were used as inputs. The data were separated into two classes, one containing clinically Normal samples, and the second containing abnormal samples that contained Variant Lymphocytes. Statistical features were extracted from these data using Principal Component Analysis (PCA) and then a Perceptron ANN was employed to differentiate between the two classes of data. The accuracy of pattern classification using this method was...

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