

ABSTRACT

SCREENING OF ROUTINE BLOOD TEST USING SUPPORT VECTOR MACHINE

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While the blood disorders such as anemias and haemoglobinopathies are very common, conditions often has multiple overlapping symptoms. With varying conditions requiring very different treatments, accurately testing for the underlying cause is vital to treatment. Testing for each specific disorder is often expensive, time-intensive, or both. Currently, there is no general method to screen for blood disorders using common routine blood tests.

A classification model has been designed to classify routine blood test data into 4 groups provided by experts using the Support Vector Machine (SVM) method. The model shows positive reinforcement for the potential use of SVM in the classification of hematology data to screen for blood disorders. With the basic One-vs-all SVM with the Linear function kernel producing the highest sensitivity and accuracy, up to 45.48% and 73,91% respectively. Most of the kernels suggests good or adequate classification ability, and a reasonable sensitivity within each class. But the high confidence ranges highly suggests the need for a more robust data, in quantity and in diversity, and will possibly lead to much more accurate models. Overall, the data suggests that SVM is suitable for this application

Keywords: Anemia, Blood disorder, Routine Blood Test, Support Vector Machine, Linear Kernel, Polynomial Kernel, RBF Kernel