Abstract

Most developing countries of the world, particularly in sub-saharan Africa, exhibit high levels of morbidity and mortality associated with the disease Schistosomiasis caused by the parasite Schistosoma Haematobium. Most individuals at risk of Schistosomiasis reside between latitudes 36°N and 34°S where average fresh water temperatures range from 25° to 30°C, placing African states among the most affected countries. Schistosoma- Mansoni and Schistosoma Haematobium account for most Schistosoma species infection in Africa. In this research work, a computational approach was provided to estimate the prevalence of Schistosoma Haematobium using machine learning to predict if an individual is infected with Schistosomiasis as well as classify individuals into groups to determine their risk of infection.

The Neural Network machine learning approach was used which involves the use of supervised learning method in which for every set of input, there is an expected output or a set of expected outputs. The algorithm used for the model is almost the same as that used for a neural network
single layer perceptron but with little variations in the transformation function applied on the inputs. The algorithm, which was implemented with Java programming language, involves assigning a weight or degree of importance to each input, finding the weighted sum of those input values, applying a transformation function on the weighted sum and adjusting the weight of each input. The inputs supplied to this model are the age, sex and location of a person.

References

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Predicting the Risk of Infection with SCHISTOSOMA HAEMATOBIUM using Machine Learning


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Machine Learning, Schistosoma Haematobium, Neural network, Supervised Learning.