Abstract

Dealing with Human Immunodeficiency Virus (HIV) and Tuberculosis (TB) as co-infection is not easy. Stigmatization, rejection and discrimination of TB and HIV patients have become the major challenges in medical field which makes it very difficult for the health care professionals to communicate with their patients. The inherent complexities of medical practices make traditional approaches of diagnosis and predicting treatment outcome inappropriate. There is the need for the provision of a system to mitigate these effects. Till date, the research done on Fuzzy Cognitive Maps have not been able to effectively handle missing data in order to predict the patient health status in spite of many existing methods of dealing with missing data. In this paper, a new diagnostics predictive algorithm of fuzzy cognitive map was developed to improve the efficiency of the prediction of patient health status in case of HIV or TB. The system is an advancement of that proposed by Djam and Kimbi in 2011, with an additional factors on effective prediction measures. The diagnosis and treatment processes were modeled based on Domain Experts' judgments. The approach proposed in this paper was validated using real patient data and the experimental results of the research show that the new proposed algorithm can effectively simulate the behavior of a medical expert and was successfully employed in designing computer-based diagnostic predictive models for effective patient management.
An Intelligent Knowledge-based Approach for the Management of Human Immunodeficiency Virus and Tuberculosis

- J. W. Grzymala-Busse and M. Hu, "A comparison of several approaches to..."

Index Terms

Computer Science  Information Sciences

Keywords

Medical Diagnosis  Treatment Outcome  Computational Intelligence  Logistic Regression  Fuzzy Cognitive Map  Diagnostic Predictive Model  Fuzzy Diagnostics Algorithm.