

Hybrid Fuzzy Weighted K-Nearest Neighbor to Predict Hospital Readmission for Diabetic Patients

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Abstract : Identification of patients at high risk for hospital readmission is of crucial importance for quality health care and cost reduction. Predicting hospital readmissions among diabetic patients has been of great interest to many researchers and health decision makers. We build a prediction model to predict hospital readmission for diabetic patients within 30 days of discharge. The core of the prediction model is a modified k Nearest Neighbor called Hybrid Fuzzy Weighted k Nearest Neighbor algorithm. The prediction is performed on a patient dataset which consists of more than 70,000 patients with 50 attributes. We applied data preprocessing using different techniques in order to handle data imbalance and to fuzzify the data to suit the prediction algorithm. The model so far achieved classification accuracy of 80% compared to other models that only use k Nearest Neighbor.

Keywords : machine learning, prediction, classification, hybrid fuzzy weighted k-nearest neighbor, diabetic hospital readmission

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