

A Framework for Pediatrics Clinic No-Show Prediction using Elastic Net and Bayesian Belief Network

Kazim Topuz

Faculty: Mehmet Bayram Yildirim

Department of Industrial and Manufacturing Engineering, College of Engineering

No-Shows not only creates additional cost for healthcare facilities but also affect the quality of care for the patients. This study predicts the no-show probability of the patient with using demographic, social and appointment as well as appointment attendance information. We develop a hybrid probabilistic prediction framework based on statistics and Bayesian network. We utilized Elastic Net for selection of the variables and state of art structural learning algorithm for building the Bayesian Belief Network (BBN). We validate our study with ten years of local pediatrics clinic data. The results indicate that the proposed BBN framework achieves a comparable prediction method to the best approaches in the literature. More importantly, our method provides novel information on the interrelations among the predictors and the conditional probability of predicting no-shows. The output of the model can be implemented to the appointment scheduling system for robust overbooking strategy.