Customer churn prediction model in mobile telecommunication using machine learning

Chathuranga L.L.G.[1]*, Rathnayaka R.M.[2], Arumawadu H.I.[3], and Chathurangi K.A.A.[1]

[1]*Department of Computing and Information Systems, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka*
[2]*Department of Physical Sciences and Technology, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka*
[3]*Dialog Axiata PLC, Colombo, Sri Lanka*

Customers are the center of all focuses on almost every industry that offers products and services. Successful business practitioners are those who understand their customers and fulfill their needs. For that, customer churn prediction is significant. Customer churn measures the number of users leaving the service provider. The primary aim of the study is to develop a novel customer churn prediction model for Sri Lankan Telecommunication Company by considering some soft factors for the early identification of customers who leave the service provider. Core relation analyzes with heat map used to feature selection. Three machine-learning algorithms, namely Logistic Regression, Naive Bayes and Decision Tree, are used in this study. Indeed, twenty attributes are mainly carried out to train these three algorithms. Furthermore, the Back propagation Neural Network was trained to predict customer churn. In neural network training; the result of three machine learning algorithms previously mention, and eight attributes that are most affected to final results are used as inputs. The data set used in this study contains 3,334 subscribers' details. The trained Neural Network has two hidden layers, with 25 total neurons. The first and second hidden layers have 15 and 10 neurons, respectively. The performances of the models are evaluated by using the confusion matrix. Final Neural Network model gives 96.7% accuracy in the testing process. The estimated results suggested that the proposed algorithm gives high performances than traditional machine learning algorithm.

Keywords: algorithm, machine learning, neural network and data mining

*Corresponding author: chathurangagihan39@gmail.com