Mobile Phone Customers Churn Prediction by using Elman and Jordan Recurrent Neural Network with Reinforcement Learning Algorithm

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Abstract

The number of mobile phone user increases consistently year by year. While gaining new customer is harder than maintaining existing one, various churn predictor engine has been developed to fulfill this purpose. Using Recurrent Neural Network in predicting churn is still new to this field. Same goes for Reinforcement Learning which is the Q-learning. For that reason, this project main purpose is to develop two famous Recurrent Neural Networks; Elman and Jordan, and also equipping them with Q-Learning; to predict the probabilities of mobile phone churning rates. The scope of this project is to evaluate the performance between ERNN and JRNN. This project is developed using Netbeans IDE and Java language. The final experimental result shows that JRNN able to give better accuracy prediction compared to JRNN.

Keywords: Churn engine, Churn Predictor, Q-Learning, ERNN, JRNN

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CHAPTER 1

INTRODUCTION

1.0 Background

As business world becomes compact and saturated, gaining new
customers is harder than maintain existing ones. In order to fulfill the need to
retain the customer, various churning method has been developed as a
marketing strategy to keep surviving in this volatile and rapid growing
environment (Richter et al. 2009).

Churn is frequently spoken of in a communication context, where it
refers to the tendency of cell-phone subscribers to switch providers. The most
basic reasons for churn are dissatisfaction with an existing provider, the lure of
a lower price from a different provider, a change in the subscriber's geographic
location, the desire for increased connection speed, or a need for different or
enhanced cell-phone coverage (Ferreira et al. 2004).