

**MASTER'S PROJECT (FALL 2014)****TOPIC:** *Rule-Based Reasoning for Price Change Prediction of Online Products in E-Commerce***PRESENTOR:** Yuhan Zhang**ADVISOR:** Dr. Haiping Xu**DATE & TIME:** Wednesday, October 15, 2014, 11:00 AM**LOCATION:** Dion 303**COMMITTEE MEMBERS:** Dr. Shelley Zhang and Dr. Firas Khatib**ABSTRACT**

Since the last two decades, more and more people prefer to shop online due to its convenience as well as for a bargain price. However, since the prices of online products change very often, customers often have to predict the price changes using their common sense. Examples of such prediction include discounts during holidays, price drop of a product due to a new model having been put on the market, or possible price cut simply because the current price of a product has been the highest one in the history for a while. Although manually predicting the prices of online products might be fun for some users, it is very inconvenient and time-consuming for most of the people. To make the online shopping process more convenient, in this project, we define a set of rules using Prolog in order to support automated rule-based reasoning for online product price change prediction in e-commerce. To illustrate the feasibility of our approach, we select a few online products from Amazon.com for our case studies. We first automatically collect the online product data including their prices and product features during the past few months from the Amazon web site. Then we analyze the data and design a set of rules for price change prediction. To make the predictions more reasonable and convincing, we further calculate the likelihood of each rule based on the historical data. By using the Prolog reasoning engine, we are able to automatically predict the price changes of an online product in three different time periods, namely three days, a week, and a month. To evaluate the effectiveness of our approach, we use some of our collected historical data as a test dataset, and calculate the accuracy of our price change prediction method. Our analysis results show that our approach can greatly help online shoppers to make right purchasing decisions in e-commerce.