

1. Fast Food



During this lab, you are going to help a manager of a fast food restaurant to improve the quality of service. The goal is to propose a set of predefined menus, at a reduced price, that match the taste of costumers. To meet this goal, the manager provides you with all past purchases at his fast food restaurant ¹.

A menu is a set of items. Intuitively, a good menu consists of items that are frequently purchased together. Thus, your task boils down to a frequent pattern mining problem. You are going to use Weka ², a data mining tool for data analysis and knowledge extraction. The steps to follow are:

1. Examine the data to identify the different items of the fast food restaurant
2. Select suitable attributes to be used to find frequent patterns (using Weka)
3. Use the Apriori Algorithm of Weka to find frequent patterns (propose your own threshold values). What problems do you face?
4. Use FPGrowth of Weka to extract frequent patterns. Try different support values. To simplify the processing, you can also filter the rules according to what they should contain.
5. Generate, from the extracted patterns, a proposal for menus
6. Using the same extracted patterns, what is the distribution of menus that should be followed by the cooks to reduce the waiting time?
7. Consider now that you have an additional information about the number of calories of each item. How would you change the A-priori Algorithm to generate only patterns that do no exceed a certain number of calories?

¹<http://www.inf.unibz.it/mkacimi/teaching.shtml>

²<http://www.cs.waikato.ac.nz/ml/weka/>

Deliverable: Write a report of 1-2 page that consists of (1) a very brief description of the data (2) the encountered problems (3) the proposed menus explaining the threshold values you have used (4) the menus distribution explaining how did you come up with it and (5) how do you deal with calories.

Deadline: 26/10/2017 at 14:00 am.