

Learning Recommendations for Health Insurance Applications

A small health insurance company wants to standardize its underwriting process. In this process an applicant can apply for a health insurance and the company decides, whether an application can be accepted. However, different workers decide differently (i.e. based on their own knowledge) and therefore the acceptance depends highly on which worker gets the application on its desk. The insurance company decided to support their workers with a knowledge-based system, which gives them recommendations how to decide in a particular case. The knowledge shall be extracted from data of past applications.

The health insurance company archived all former, successful application. The extract of these applications was transformed into an excel sheet. The attributes of the extracted data are:

- age in years (attribute "age")
- number of surgeries in the last 5 years (attribute "surgery")
- number of doctor visits in the last 5 years (attribute "docvisit")
- does the applicant have an allergy (attribute "allergy")
- does the applicant takes medications on a daily base (attribute "med")
- on which diseases does the applicant suffer (attribute "disease")
- what is her or his BMI (Body Mass Index) (attribute "bmi")?
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Further the company checks how much money these customers did cost the company so far. If a customer did cost a lot of money (expensive surgeries, expensive medications etc) then its risk value is set to high. If the customer did not cost lot of money in the past (only some doctor visits over the years, some medications) the risk value is set to low. All cases in between are set to medium. The risk value is added to the sheet as well (attribute "class").

The aim of the knowledge extraction task here is to analyze which applications in the past results into which risk value. Generalized knowledge is highly appreciated!