Abstract

One of the main goals of knowledge discovery is to find nuggets of useful knowledge that could influence or help users in a decision-making process. This task can be viewed as searching in an immense space for possible actionable concepts. Most of the KDD researchers believe that the task of finding actionable patterns is not easy and actionability is a purely subjective concept. Practitioners report that applying the KDD algorithms comprises not more than 20% of the knowledge discovery process and the remaining 80% relies on human experts to post-analyze the discovered patterns manually. To improve the effectiveness of the process, actionability can be defined as an objective measure via providing a well-defined strategy of pattern generations that allow guidance from domain experts at key stages in the search for useful patterns. The approach tightly integrates KDD and decision making by solving the decision-making problems directly on the core of KDD algorithms. In this paper, we present a granular computing-based method for generating a set of rules by utilizing the domain experts’ prior knowledge to formulate its inputs and to evaluate the observed regularities it discovers. The generated rule overcomes the traditional data-centered pattern mining, resulting to bridge the gap and enhance real-world problem-solving capabilities.