

▼ Introduction to Knowledge Discovery for Managerial Decision Support Minitrack

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This minitrack consists of five papers involving knowledge discovery for managerial decision support. These five papers illustrate a diverse set of approaches, demonstrating the variety of ways in which modern information technologies can be applied to today's complex decision problems.

Knowledge discovery is an evolutionary area, with new applications arising from the potential created by new technological developments. Epistemology has always dealt with scientific understanding. As science developed, different approaches emphasizing theory (Descartes; Leibniz) or empirical observation (Locke) apparently competed with each other. Kant focused on applying multiple models, with potential to tie theory and empirical work together.

In current information technology research, we are driven in part by what is made possible by technology. This technology is burgeoning, with exponential growth in what we can do. This growth seems to exceed our ability as humans to digest. The papers in this minitrack offer some insight into the efforts to more efficiently use information technology tools to better understand our rapidly changing world.

The paper by Graham, Carley and Cukor, involves application of information technology to the real-time problem of intelligence gathering in the traditional military sense. Text mining was applied along with network analysis. Results were of an empirical nature.

On the technology tools side, the Lessmann, Li, and Voss paper addresses core vector machines as an alternative to support vector machines. The application issue of suitability of this method for corporate planning is addressed. Core vector machines are compared to support vector machines in a benchmarking study using data sets representative

of real applications. The study found that while the core vector machine approach provided slightly higher accuracy, it was quite sensitive to parameters. This research is valuable in focusing on the direction of future testing of the core vector machine method.

Representing a more theoretical (modeling) approach, Sharma and Osei Bryson address data mining methodology, with emphasis on the "business understanding" phase. An ontology framework incorporating tools and techniques with the aim of yielding better business understanding is presented. Their system focuses on business processes in order to achieve better fit with organizational requirements. The ontology is used to generate a list of desired data mining study outputs.

Zhang, Zhou and Faloutsos address the data mining application of fraud detection. Loopy belief propagation is applied to network level fraud detection with attractive results on eBay data. As in the Lessman et al. study, parameter sensitivity was found to be an important factor.

Fuller, Biros and Delen present another research report involving text mining, again empirically testing alternative models in the important area of deception detection. Implementation of alternative classification algorithms were systematically examined for problem sets representing real applications in the problem domain. The study identified interesting paths for future research.

Thus this minitrack includes papers covering a wide variety of approaches. We consider this a good thing, and encourage future submissions involving knowledge discovery, regardless of the research approach used.