

# Rule Induction from a Decision Table Using Rough Sets Theory

Mert BAL

Mathematical Engineering Department  
Yıldız Technical University Istanbul, Turkey  
mert.bal@gmail.com

Ayşe DEMİRHAN

Business Administration Department  
Yıldız Technical University Istanbul, Turkey  
aysedemirhan74@gmail.com

**Abstract**— Today, because of the rapid developments in both computer hardware and software industries, the increase in the storage capacities of huge databases, the data mining and the usage of the useful patterns that reside in the databases, became a very important research area. In parallel with the rapid increase in the data stored in the databases, effective use of the data is becoming a problem. To discover the rules or interesting and useful patterns from these stored data, the data mining techniques are used. If the data is incomplete or inaccurate, the results extracted from the database during the data discovery phase would be inconsistent and meaningless. Rough sets theory is a new mathematical approach used in the intelligent data analysis and data mining if data is uncertain or incomplete. This approach is of great importance in cognitive science and artificial intelligence, especially in machine learning, decision analysis, expert systems and inductive reasoning.

There are many advantages of the rough set approach in intelligent data analysis. Some of these advantages are being suitable for parallel processing, finding minimal data sets, supplying effective algorithms to discover hidden patterns in data, valuation of the meaningfulness of the data, producing decision rule set from data, being easy to understand and the results obtained can be interpreted clearly. In the last years, the rough sets theory is widely used in different areas like engineering, banking and finance.

**Keywords:** Rough sets theory, data mining, decision table, rule discovery