Chapter 2 [1]

THE ONE CLAUSE AT A TIME (OCAT) APPROACH TO DATA MINING AND KNOWLEDGE DISCOVERY

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Abstract: This chapter reviews a data mining and knowledge discovery approach called OCAT (for One Clause At a Time). The OCAT approach is based on concepts of mathematical logic and discrete optimization. As input it uses samples of the performance of the system (or phenomenon) under consideration and then it extracts its underlying behavior in terms of a compact and rather accurate set of classification rules. This chapter also provides ways for decomposing large scale data mining problems, and a way of how to generate the next best example to consider for training. The later methods can be combined with any Boolean function learning method and are not restricted to the OCAT approach only.

Key Words: Inductive Inference, Knowledge Discovery, Data Mining, Rule Extraction, Learning from Examples, CNF/DNF, Boolean Functions, Discrete Optimization, Maximum Clique, Connected Components in Graphs, Machine Learning.

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[1] Triantaphyllou, E. and G. Felici (Eds.), **Data Mining and Knowledge Discovery Approaches Based on Rule Induction Techniques**, Massive Computing Series, Springer, Heidelberg, Germany, pp. 45-87, 2006.

[2] The author is very appreciative for the support by the U.S. Navy, Office of Naval Research (ONR), research grants N00014-95-1-0639 and N00014-97-1-0632.