Abstract

In this paper, we compare the performance of three traditional robust classifiers (Neural Networks, Support Vector Machines, and Decision Trees) with and without utilizing multi-objective genetic programming in the feature extraction phase. This work argues that effective feature extraction can significantly enhance the performance of these classifiers. We have applied these three classifiers stand alone to real world five datasets from the UCI machine learning database and also to network intrusion “KDD-99 cup” dataset. Then, the experiments were repeated by adding the feature extraction phase. The results of the two approaches are compared and conclude that the effective method is to evolve optimal feature extractors that transform input pattern space into a decision space in which the performance of traditional robust classifiers can be enhanced.

References

1. Y Zhang and P I Rockett “Domain-Independent Approaches to Optimise Feature
Extraction for MultiClassification using Multi-Objective Genetic Programming” Technical Report No. VIE 2007/001 Department of Electronic and Electrical Engineering University of Sheffield


Genetic Programming Feature Extraction with Different Robust Classifiers for Network Intrusion Detection


Index Terms

Computer Science

Artificial Intelligence
Keywords

Genetic Programming, Feature Extraction, Neural Network, Support Vector Machines, Decision Trees.