SOFT COMPUTING: EXPERIMENTATION OF MULTI-CLASSIFIER-BASED CYBER-ATTACK DETECTION SYSTEM

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ABSTRACT

The World Wide Web is used by hackers to send malicious attack in form of phishing, e-mail spoofing and malware infection to people. With the speed of cyber activity and high volume of data used, the protection of cyber space cannot be handled by any physical device or by human intervention alone. It needs considerable automation to detect threats and to make intelligent real-time decisions. It is difficult to develop software with conventional algorithms to effectively protect against the dynamically evolving attacks. It can be tackled by applying bio inspired computing methods of artificial intelligence to the software. The purpose of this study is to explore the possibilities of artificial intelligence based algorithms in addressing the cybercrime issues.

The algorithms include Logistic Regression (LR), Support Vector Machine (SVM) and Counter Propagation Neural network (CPNN) and their ensemble. 700 dataset were gotten from a renowned database. The dataset were subjected to features extraction and transformation. The outputs of the experimentation showed that sensitivity produced by LR, SVM and CPNN are 65, 72.5 and 78% respectively. The results of specificity of LR, SVM and CPNN are 57.0, 66.5 and 63.5% respectively while the results of accuracy produced by LR, SVM and CPNN are 75.8, 88.3 and 87.5% respectively. However, the results produced by ensemble of the three algorithms are 70.4, 81.7 and 91.6% for sensitivity, specificity and accuracy respectively.

KEYWORDS: *Cybercrime, Logistic Regression, Support Vector Machine, Counter Propagation Neural Network*