

ABSTRACT

The increase in the number of internet users as a medium of communication continues to increase, causing anomalies that can disrupt network traffic. Anomalies have the potential for an attack or threat to a computer or server. Many types of attacks on an internet network such as DoS (Denial of Service), DDoS (Distributed Denial of Service), flash crowd, and so on. Negative effects of anomalies harm many parties, either from the user or the internet service provider. To reduce the number of anomalies there is a need to do a process, where the process can restore a state of anomalies to normal.

In the process of decreasing traffic anomalies, using a branch of machine learning, ie reinforcement learning (RL). Reinforcement learning is a learning done by an agent by interacting with an unfamiliar environment, the goal of making decisions directly in the environment. Agent interacts with how to select and execute an action. The environment will provide a new state and also a feedback response in the form of positive or negative rewards. Signal rewards are awarded in accordance with the evaluation results on the quality of action performance. Learning process occurs when the agent chooses action in the form of a number of anomaly reduction presentation, because the anomaly decrease does not occur drastically, but with the stages of reinforcement learning. In this Final Project, fuzzy algorithm is used in facilitating the process of determining the number of services to be controlled before going into the RL process.

The research of this final project resulted in a system that can make the learning process to decrease the rate of anomaly. Every 100 incoming traffic will be evaluated, and affect the Q-value of each service. By doing the testing process, which has been adjusted to the results of training resulted in anomaly decreasing by 64%. The dominance of anomalies lies in the ftp-data and telnet services.

Keyword: Anomaly Traffic, Reinforcement Learning, Fuzzy Algorithm