Intrusion Detection with Genetic Algorithms and Fuzzy Logic

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ABSTRACT

This paper discusses the use of artificial intelligence in intrusion detection systems.

General Terms

Intrusion detection

Keywords

Genetic algorithms, Fuzzy logic

1. INTRODUCTION

I will be looking at how genetic algorithms and fuzzy logic are used to train intrusion detection systems about possible threats.

I plan to use the following sources:

- I expect [3] and [4] to be two of my main sources.
- I may use [7] for my third source or for background.
- I'll use [5, 2, 1] as background.

I won't be using [6], because it doesn't talk about genetic algorithms or fuzzy logic.

2. REFERENCES

[1] V. Bapuji, R. N. Kumar, A. Govardhan, and S. Sarma. Soft computing and artificial intelligence techniques for intrusion detection system. *Network and Complex Systems*, 2(4):24–31, 2012. *This is a good background source. It talks about artificial intelligence and what an intrusion detection system is.*

[2] R. Borgohain. Fugeids: Fuzzy genetic paradigms in intrusion detection systems. *CoRR*, abs/1204.6416, 2012. *This paper explains what fuzzy logic is, and also what genetic algorithms are.*

[3] M. S. Hoque, M. A. Mukit, and M. A. N. Bikas. An implementation of intrusion detection system using genetic algorithm. *CoRR*, abs/1204.1336, 2012. *This is one of my main sources, and talks about using IDS with a genetic algorithm. It uses the KDD99 data set.*

[4] P. Jongsuebsuk, N. Wattanapongsakorn, and C. Charnsripinyo. Network intrusion detection with fuzzy genetic algorithm for unknown attacks. In *Information Networking (ICOIN), 2013 International Conference on*, pages 1–5, 2013. *This is one of my main sources, and talks about using IDS with fuzzy logic and genetic algorithms. It uses a newer data set (RLD09).*

[5] H.-J. Liao, C.-H. R. Lin, Y.-C. Lin, and K.-Y. Tung. Intrusion detection system: A comprehensive review. *Journal of Network and Computer Applications*, 36(1):16 – 24, 2013. *This is a good background source. It talks about detection methodologies, and it has pros and cons of them.*

[6] P. Sangkatsanee, N. Wattanapongsakorn, and C. Charnsripinyo. Practical real-time intrusion detection using machine learning approaches. *Computer Communications*, 34(18):2227 – 2235, 2011. *I won't be using this because it doesn't talk about genetic algorithms or fuzzy logic.*

[7] S. X. Wu and W. Banzhaf. The use of evolutionary computation in knowledge discovery: The example of intrusion detection systems. In S. Dehuri and S.-B. Cho, editors, *Knowledge Mining using Intelligent Agents*, volume 6 of *Advances in Computer Science and Engineering*, chapter 2, pages 27–59. WorldSciBook, Dec. 2010. *I may use this as a main source, or use it for background information.*

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