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## Improved Malware Detection Model with Apriori Association Rule and Particle Swarm Optimization (Article) (Open Access)

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### Abstract

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The incessant destruction and harmful tendency of malware on mobile devices has made malware detection an indispensable continuous field of research. Different matching/mismatching approaches have been adopted in the detection of malware which includes anomaly detection technique, misuse detection, or hybrid detection technique. In order to improve the detection rate of malicious application on the Android platform, a novel knowledge-based database discovery model that improves apriori association rule mining of a priori algorithm with Particle Swarm Optimization (PSO) is proposed. Particle swarm optimization (PSO) is used to optimize the random generation of candidate detectors and parameters associated with apriori algorithm (AA) for features selection. In this method, the candidate detectors generated by particle swarm optimization form rules using apriori association rule. These rule models are used together with extraction algorithm to classify and detect malicious android application. Using a number of rule detectors, the true positive rate of detecting malicious code is maximized, while the false positive rate of wrongful detection is minimized. The results of the experiments show that the proposed a priori association rule with Particle Swarm Optimization model has remarkable improvement over the existing contemporary detection models. 

### SciVal Topic Prominence

Topic: Computer crime | Applications | Android malware

Prominence percentile: 99.539

### Indexed keywords

Engineering controlled terms: Android (operating system) | Anomaly detection | Association rules | Knowledge based systems | Malware | Particle swarm optimization (PSO)

Engineering uncontrolled terms: Apriori algorithms | Extraction algorithms | False positive rates | Features selection | Knowledge-based database | Malicious android applications | Particle swarm optimization models | True positive rates

Engineering main heading: Mobile security

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## References (48)

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1 Roiger, R.J., Geatz, M.W.
(2003) *Data Mining: A Tutorial-Based Primer*. Cited 223 times.
Pearson Education Inc.

2 Agrawal, R., Srikant, R.
Fast algorithms for mining association rules
(1994) *Proceedings of the 20th InternationalConference on Very Large Data Bases, VLDB*, 1215, pp. 487-499. Cited 11112 times.
September

3 Gu, J., Wang, B., Zhang, F., Wang, W., Gao, M.
An improved apriori algorithm
(2011) *Communications in Computer and Information Science*, 224 CCIS (PART 1), pp. 127-133. Cited 3 times.
ISBN: 978-364223213-8
doi: 10.1007/978-3-642-23214-5_18
View at Publisher

4 Adebayo, O.S., Mabayoje, M.A., Mishra, A., Osho, O.
Malware detection, supportive software agents and its classification schemes
(2012) *International Journal of Network Security &Its Applications (IJNSA)*, 4 (6), pp. 33-49. Cited 5 times.

5 Siddiqui, M.A.
(2008) *Data Mining Methods for Malware Detection [Phd Thesis]*. Cited 19 times.
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