Android Malware Detection: A Hybrid Approach using Machine Learning Techniques

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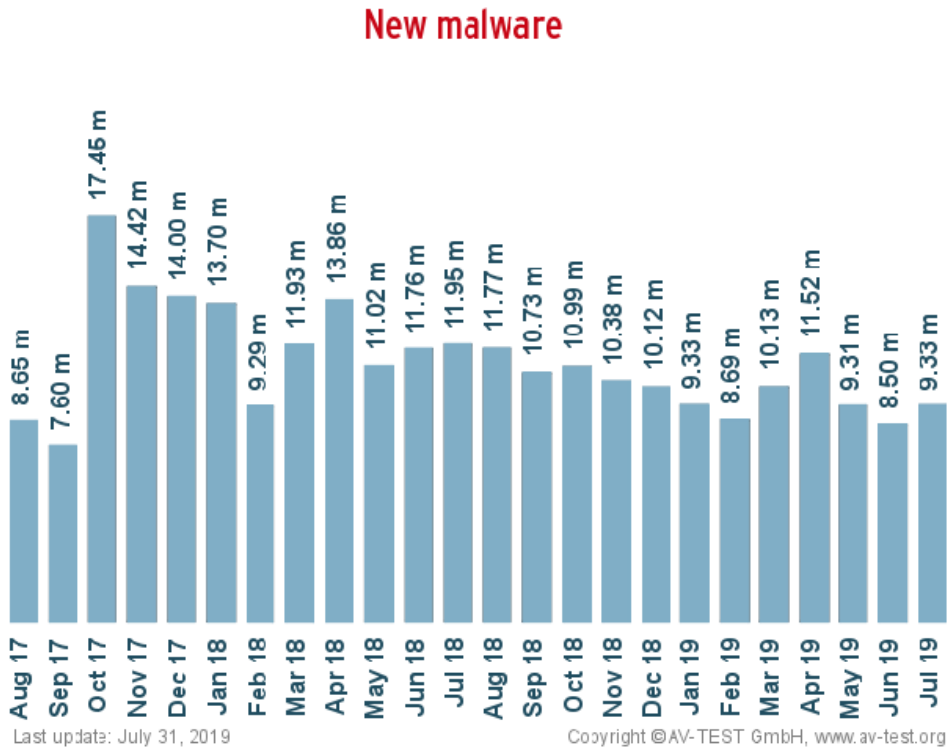
Introduction (Android Malware)

Android Malware (malicious application) is any application with mischievous intention -

- disrupt normal functioning
- bypass access controls
- gather sensitive information
- display unwanted advertising
- getting unauthorized control

Introduction (Android Malware)



Android Malware Detection Techniques

- Static Analysis
- Dynamic Analysis
- Hybrid Analysis

Drawbacks

Static Analysis	Dynamic Analysis
◎ Data obfuscation	◎ Limited code coverage
◎ Control flow obfuscation	◎ Tricked in emulated environment by smart malware
◎ Dynamic XML loading	
◎ Native code	
◎ Encryption	

Hybrid Analysis

A fusion of static and dynamic analysis would be a good candidate as it prevails over the individual drawbacks of static and dynamic analysis.

Research Question

- RQ: How can we improve the performance of android malware detection using hybrid analysis with machine learning techniques?

Research Question (sub-questions)

- SQ1. What are the important static and dynamic features for android malware detection using machine learning?
- SQ2. How to select the important static and dynamic features for android malware detection?

Rationale of the Research (Academia)

- To alleviate the evasion techniques of malware authors by integrating Hybrid Analysis.
- To improve the performance of malware detection process.

Rationale of the Research (National)

- To achieve the new millennium development goal: *Digital Bangladesh* by 2021,
  - Government has taken many projects and performed many activities regarding android app.

Rationale of the Research (National)

- This research aims to detect android malware in advance effectively.
- By so, this research work can assist the Bangladesh government's new millennium development goal - "Digital Bangladesh" by 2021.

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Thank you!

Any questions?

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