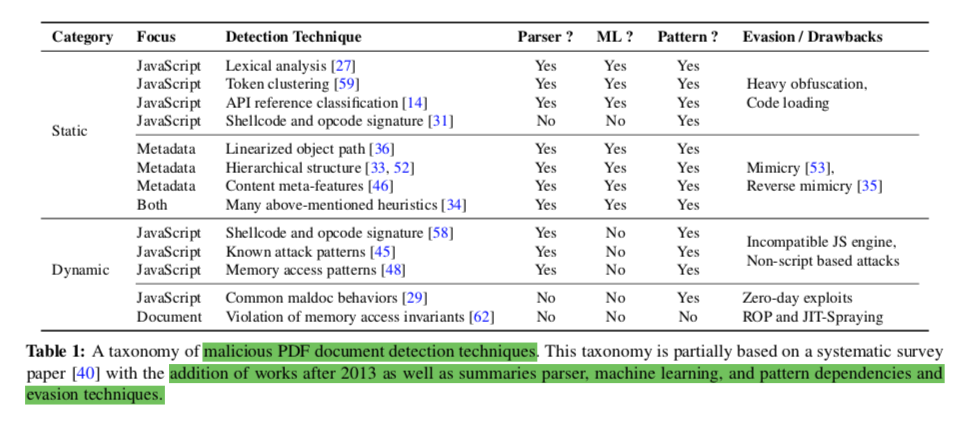
（0）（英文变中文）



（1）

Lux0r [14] constructs two sets of API reference patterns found in benign and malicious documents, respectively, and uses this to classify maldocs.

[14]  IginoCorona, DavideMaiorca, DavideAriu, andGiorgioGiacinto. Lux0R: Detection of Malicious PDF-embedded JavaScript Code through Discriminant Analysis of API References. In *Proceedings of the Artificial Intelligent and Security Workshop (AISec)*, 2014.

Maiorca *et al*. [34] focuses on both JavaScript and metadata and fuses many of the above-mentioned heuristics into one procedure to improve evasion resiliency.

[34] DavideMaiorca, DavideAriu, IginoCorona, andGiorgioGiacinto. An Evasion Resilient Approach to the Detection of Malicious PDF Files. In *Proceedings of the International Conference on Information Systems Security and Privacy (ICISSP)*, 2016.

Reverse mimicry [35] attack, on the contrary, attempts to embed malicious content into a benign PDF by taking care to modify it as little as possible.

[35] DavideMaiorca,IginoCorona,andGiorgioGiacinto.Lookingat the Bag is not Enough to Find the Bomb: An Evasion of Structural Methods for Malicious PDF Files Detection. In *Proceedings of the 8th ACM Symposium on Information, Computer and Commu- nications Security (ASIACCS)*, Hangzhou, China, March 2013.

Mimicus [53] implements mimicry attacks and modifies existing maldocs to appear more like benign ones by adding empty structural and metadata items to the documents with no actual impact on rendering.

[53]  NedimSrndicandPavelLaskov.PracticalEvasionofaLearning- Based Classifier: A Case Study. In *Proceedings of the 35th IEEE Symposium on Security and Privacy (Oakland)*, San Jose, CA, May 2014.

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[33] Davide Maiorca, Davide Ariu, Igino Corona, and Giorgio Giac- into. A Structural and Content-based Approach for a Precise and Robust Detection of Malicious PDF Files. In *Proceedings of the International Conference on Information Systems Security and Privacy (ICISSP)*, 2015.

[36] DavideMaiorca,GiorgioGiacinto,andIginoCorona.APattern Recognition System for Malicious PDF Files Detection. In *Pro- ceedings of the 8th International Conference on Machine Learning and Data Mining in Pattern Recognition (MLDM)*, 2012.

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[45] Florian Schmitt, Jan Gassen, and Elmar Gerhards-Padilla. PDF Scrutinizer: Detecting JavaScript-based Attacks in PDF Documents. In *Proceedings of the 10th Annual International Confer- ence on Privacy, Security and Trust (PST)*, 2012.

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