Sequential Detection of Network Intrusions

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Abstract—During World War II, famous mathematician Abraham Wald invented an adaptive statistical inferential technique, Sequential Probability Ratio Tests (SPRTs), for testing the power of ammunition. In recent years of the information age, researchers of information technology have discovered that Wald’s SPRTs can also be put into use for fighting against malicious intrusions of data networks. In this presentation, we attempt to illustrate, with minimum amount of mathematics, the working of SPRTs for the detection of network intrusions. Moreover, we will address the limitations of Wald’s SPRTs and discuss possible new adaptive statistical inferential methods for improving the accuracy and speed of detection. Two common categories of network intrusions including, portscan attacks and Denial-of-Service attacks, are covered in our presentation.

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