



# Cyber Security Threats and Vulnerabilities: A Systematic Mapping Study

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## Abstract

There has been a tremendous increase in research in the area of cyber security to support cyber applications and to avoid key security threats faced by these applications. The goal of this study is to identify and analyze the common cyber security vulnerabilities. To achieve this goal, a systematic mapping study was conducted, and in total, 78 primary studies were identified and analyzed. After a detailed analysis of the selected studies, we identified the important security vulnerabilities and their frequency of occurrence. Data were also synthesized and analyzed to present the venue of publication, country of publication, key targeted infrastructures and applications. The results show that the security approaches mentioned so far only target security in general, and the solutions provided in these studies need more empirical validation and real implementation. In addition, our results show that most of the selected studies in this review targeted only a few common security vulnerabilities such as phishing, denial-of-service and malware. However, there is a need, in future research, to identify the key cyber security vulnerabilities, targeted/victimized applications, mitigation techniques and infrastructures, so that researchers and practitioners could get a better insight into it.

**Keywords** Cyber security · Threats · Vulnerabilities · Attack

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