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Communications in Computer and Information Science • Volume 1487 CCIS, Pages 277 - 287 • 2021 • 3rd International Conference on Advances in Cyber Security, ACeS 2021 • Virtual Online • 24 August 2021 through 25 August 2021 • Code 269969

Document type

Conference Paper

Source type

Book Series

ISSN

18650929

ISBN

978-981168058-8

DOI

10.1007/978-981-16-8059-5_16

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Analysis of File Carving Approaches: A Literature Review

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Full text options Export

Abstract

Author keywords

Indexed keywords

SciVal Topics

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Funding details

Abstract

Digital forensics is a crucial process of identifying, conserving, retrieving, evaluating, and documenting digital evidence obtained on computers and other electronic devices. Data restoration and analysis on file systems is one of digital forensic science's most fundamental practices. There is a lot of research being done in developing file carving approaches and different researches focused on different aspects. With the increasing numbers of literature that are covering this research area, there is a need to review this literature for further reference. A review is carried out reviewing different works of literature covering various aspects of carving approaches from multiple digital data sources including IEEE Xplore, Google Scholar, Web of Science, etc. This analysis is done to consider several perspectives which are the current research direction of the file carving approach, the classification for the file carving approaches, and also

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the challenges are to be highlighted. Based on the analysis, we are able to state the current state of the art of file carving. We classify the carving approach into five classifications which are general carving, carving by specific file type, carving by structure, carving by the file system, and carving by fragmentation. We are also able to highlight several of the challenges for file carving mentioned in the past research. This study will serve as a reference for scientists to evaluate different strategies and obstacles for carving so that they may choose the suitable carving approaches for their study and also future developments. © 2021, Springer Nature Singapore Pte Ltd.


Author keywords

Challenges in carving; Digital forensic; File carving; File carving approaches' analysis

Indexed keywords 

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