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Hash Based Block Matching for Digital Evidence Image Files from Forensic Software Tools

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Abstract : Internet use, intelligent communication tools, and social media have all become an integral part of our daily life as a result of rapid developments in information technology. However, this widespread use increases crimes committed in the digital environment. Therefore, digital forensics, dealing with various crimes committed in digital environment, has become an important research topic. It is in the research scope of digital forensics to investigate digital evidences such as computer, cell phone, hard disk, DVD, etc. and to report whether it contains any crime related elements. There are many software and hardware tools developed for use in the digital evidence acquisition process. Today, the most widely used digital evidence investigation tools are based on the principle of finding all the data taken place in digital evidence that is matched with specified criteria and presenting it to the investigator (e.g. text files, files starting with letter A, etc.). Then, digital forensics experts carry out data analysis to figure out whether these data are related to a potential crime. Examination of a 1 TB hard disk may take hours or even days, depending on the expertise and experience of the examiner. In addition, it depends on examiner’s experience, and may change overall result involving in different cases overlooked. In this study, a hash-based matching and digital evidence evaluation method is proposed, and it is aimed to automatically classify the evidence containing criminal elements, thereby shortening the time of the digital evidence examination process and preventing human errors.

Keywords : block matching, digital evidence, hash list, evaluation of digital evidence
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