

Forensic Science and the Detection of AI-Manipulated Evidence in the Era of Generative Artificial Intelligence

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Abstract: Generative artificial intelligence (AI) is shifting how we understand digital evidence, creating hurdles for forensic science and legal systems. With AI, we are now able to create fake images, sound recordings, video clips and documents that complicate the determination of their authenticity, reliability, and evidentiary integrity. While traditional forensic methods such as hashing, file validation and metadata analysis continue to be used, they are not sufficient by themselves in determining whether evidence has been altered using AI. More advanced forensic techniques are needed, including pattern detection, signal detection, machine assistance and cross-modal verification, to identify AI-generated digital manipulations. This article presents an overview of a legal framework for AI-generated evidence regarding authenticity/admissibility/expert testimony/burden of proof, as well as discussing the risks involved regarding error/technological evolution/limited resources and ethical issues. Additionally, it suggests standardisation, validation, and collaboration for forensic processes to create better quality assurance with AI-generated evidence.

Keywords: Forensic Science, Generative Artificial Intelligence, AI-manipulated Evidence, Digital Forensics, Admissibility Of Evidence

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