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Proceedings of Sixth International Ethical Hacking Conference

AI and Law (eHaCON 2025)

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Leveraging Artificial Intelligence in Digital Forensics and Its Legal Implications



Alice Dey and Sadhan Kumar Dey

Abstract The incorporation of **Artificial Intelligence** (AI) in Digital Forensics has revolutionized and reinstated the examination and analysis of both direct and indirect digital evidence, providing advanced speed of examination of report, improved accuracy of report and efficiency in getting the final result. AI-powered technologies can function within itself, i.e. automate data extraction, pattern identification, and anomaly detection, allowing and aiding forensic experts to handle massive amounts of data more efficiently. Machine learning techniques helps in predictive analysis and real-time threat detection, therefore enhancing the identification of cybercrimes both in common and national level questioning and challenging the security of national importance. Nevertheless, the application of AI in digital forensics also generates substantial ethical and legal concerns. On the other hand, the implementation of AI also raises substantial issues, notably the possibility of algorithmic bias, the intricacy of AI decision-making while generating processed and available data, and difficulties guaranteeing the admissibility of evidence produced by AI in court which are further referred by experts. Concerns regarding data privacy and the possibility of over-surveillance are also raised by the use of AI in forensics.

Keywords Artificial intelligence (AI) · Digital forensics · Legal implications · Machine learning · Algorithmic bias · Data privacy

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