Application of artificial intelligence in forensic science

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When it comes to criminal justice delivery, forensic science has put forward numerous cases as an example of its efficiency and importance in a criminal case investigation. To elaborate, forensic science in simple terms is a multidisciplinary branch of science that efficiently uses various scientific principles to study criminal cases and help deliver justice in the court of law. The extensive use of artificial intelligence (AI) in different fields of science can be observed nowadays with enormous benefits. AI can be defined as the ability of machines or computers to showcase consciousness and emotionality which can be compared to that of humans or any other animal. Hence, it can also be considered as machine intelligence. The major technique to develop AI is by developing a machine to collect information from the environment as input and act accordingly to achieve the desired result. This system can be compared to the ability of humans to learn and implement. AI, as per the records available, can be applied in crime scene reconstruction, blood spatter analysis, cyber forensics, data management, processing and acquisition, pattern recognition and puzzle-solving, questioned document analysis, in ballistics to analyse various firearms and projectiles, forensic medicine, forensic toxicology, record maintenance as well as improving contact between individuals during an investigation, etc. Apart from all this, in forensic medicine “virtual autopsy’’ has also been introduced. A virtual autopsy is a process in which the examination of a dead body can be carried out without performing incisions on the body. This has various advantages over the traditional autopsy as bodies that are toxic can be examined easily without contamination risks as well as be used in cultures where conventional autopsies are prohibited. However, this technology is still in the developing stage and requires extensive time and study before its widespread application and further enhancement. Therefore, machine learning and AI have the ability to revolutionise the field of forensic science and deliver justice in a quicker and more efficient way.

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