The Legality of AI-Generated Evidence in Trials

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The abrupt exponential growth of artificial intelligence has revolutionized forensic science and criminal investigations in radical matters. AI is increasingly emerging as an integral part of data analysis, forensic reconstruction, analysis and redefines traditional methods of investigations. With AI evidence being used in criminal trials more and more, admissibly, reliability, and compatibility with constitutional standards must be assessed. While AI generated evidence is not automatically inadmissible, it must be highly reliable, open, and comfortable in order to protect defendants rights and ensure an even trial.

As the technology for artificial intelligence is improving, inclusion in forensic use in crime investigation is expected to be much wider. As much as there is vast potential in using evidence produced by AI in offering better tools for analysis, use in courts must be highly regulated for there to be rightful fairness and correctness in courts. The judiciary system must ensure there is equity in meeting the potential for use in AI and ensuring core rights, in particular the right to due process and confrontation. By subjecting it to strict judicial standards and mechanisms for control, there can be a method in which AI can augment and not undermine reliability and trustworthiness in crime trials. In Kumho Tire Co. v. Carmichael (1999), the court applied the Daubert standard to all expert testimonies, including ai-based techniques. Forensic evidence produced by AI has to meet the general scientific and technical requirements of reliability to be admissible as evidence because of these precedents.

The Supreme Court created precedent for general acceptance in providing expert testimonies in Daubert v. Merrell Dow Pharmaceuticals, Inc. The Court ruled out the Frye standard, which requires scientific evidence to have been "generally accepted" in the relevant

community. The court created a different foundation for a basis based upon federal rule of evidence 702 requiring a judge to consider examining if it had undergone peer review. If it had been known for potential for error rate, and if it had general acceptance.This decision established the judge as the gatekeeper of scientific evidence, thus making it essential that forensic methodologies or AI-generated evidence meet rigorous scientific standards before being admitted in court. As a result, AI-based forensic tools will now need to offer evidence of reliability built through empirical testing, with an explanation about the program's error rate to comply with the Daubert ruling.

Kumho Tire Co. v. Carmichael Expanded the Daubert standard from purely scientific testimony to all forms of expert evidence, including technical and specialized knowledge. Specifically, this case was considered a tire blowout; in the totality of the facts of the case, the plaintiff relied upon the testimony of an expert to assert the cause of the failure. The court found that for context such as scientific testimony, the same reliability and relevant criteria should apply to technical expertise. This ruling has tremendous implications for AI related forensic evidence in that it affirms that the court must additionally scrutinize not only scientific conclusions but also technological mythologies, including the use of machine learning models in forensic investigations. This means that AI forensic evidence must undergo thorough examination to ensure that the mythologies and underlying algorithms employed adhere to the Daubert-Kumho reliability standards.

The Sixth Amendment confrontation clause entitles the criminal defendant to a Right of Confrontation with their witness. The traditional forensic experts can be cross-examined, but evidence produced by AI poses a new question: if the "witness" is an algorithm, how can one exercise the right of confrontation? Courts tend to view machine output not to trigger the

Confrontation Clause since they are not regarded as human speech. There are some, however, who argue that forensic evidence from AI must be cross-examined when applied to discretionary judgment or probabilistic inference that has the potential to influence a jury's perception of guilt.

One of the largest problems with accepting AI generated evidence is determining its reliability. AI software is only as good as the training data used to create it, and poor training data can generate more conclusions. An option is to request forensic techniques to disclose their error rates; however, most AI-based tools are "black boxes", and it is difficult to assess their reliability all together. AI forensic tools are generally Black Box statistical models. Defense lawyers will not be able to probe AI generated evidence without knowledge of the algorithm and training data employed. Judicial protections will need to force disclosure of important information regarding AI techniques so defendants can effectively challenge evidence against them.

Bias in AI forensic tools is also a concern. If an AI program is trained using biased data, it will eventually generate discriminatory or biased output. Studies have found that face recognition systems and softwares, in particular, is gender biased and racially biased, which makes one question their credibility in criminal convictions. The Judiciary must thoroughly scrutinize AI grounded evidence to ensure that prejudice or unreliable forensic results are not admitted.

In order to overcome such difficulties, policymakers and courts should enact a number of various kinds of reforms. Courts and legislators ought to compel developers of forensic AI to reveal training data, validation processes, and error rate to promote transparency. Judges must also be trained on the capabilities and limits of AI produced evidence in order to play their roles effectively. The defendant should be provided with access to AI forensic software and expert

witnesses that can independently examine and challenge AI generated evidence. The policymakers should also leave intact policies addressing algorithmic bias so that the AI forensic software does not disproportionately impact certain demographic groups.

AI-generated evidence is also subject to proof integrity and chain of custody concerns. Traditional forensic evidence and proof traces have a documented trail for proof to prevent adulteration and ensure real proof. AI-generated forensic proof is based on information at advanced-level processing without apparent mechanisms for transparency traces. It is not possible to ensure proof produced using AI is adulterated accidentally or purposely while processing. Courts will need stricter controls for ensuring proof producing using AI is checked, in a manner ensuring input to information, type of processing, and output are documented and available for auditing

Furthermore, the constantly evolving nature of AI technology poses a consistency problem in precedents. Controversial techniques are relatively fixed for decades, being revisited and refined time and time again, while constantly being refined and adapted are AI models. A settled method in today can be subject to being adapted in a manner compromising reliability and consistency in future cases. The questions are raised as to if convictions based upon evidence produced using AI in the past are to be reheard when technology is advanced. Lawmaking would have to be adapted in order to be able to accommodate rapid generation of AI software to incorporate review and reexamination mechanisms for forensic evidence produced using AI in a time period in order for there to be fairness and justice in criminal proceedings.

An another serious related threat is system compromise and adversarial attacks. It is possible to fool AI-based forensic analysis using information manipulations in subtle manners and thus resulting in incorrect or misinterpretable outcomes. Researchers have, for instance,

proven that distorting a photograph or sound file in subtle manners will have human beings being wrongly identified or distorting forensic outcomes. It seriously questions the security and integrity of forensic information derived from AI being utilized in criminal proceedings. As a preventive measure for this threat, courts would need strict testing procedures, demanding AI-based forensic programs to be able to withstand rigorously adversarial compromise testing prior to being utilized as proof.

As the technology for artificial intelligence is continually being improved, application in crime investigation in forensic science is becoming universal.While AI generated evidence offers powerful analytical tools, the use of it in legal procedures must be carefully regulated to ensure the proper fairness and accuracy in courts. The judiciary system should be in a position to reach a level at which it applies capability in AI without encroaching on rights, especially rights to due process and confrontation. Courts, legislatures, and lawyers should come in hand in ensuring there are guidelines for application in proceedings, reliability and transparency in AI-generated proof. By implementing strict legal guidelines and review mechanisms, the judiciary system can ensure AI is supportive, and not undermining, integrity in crime cases.

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