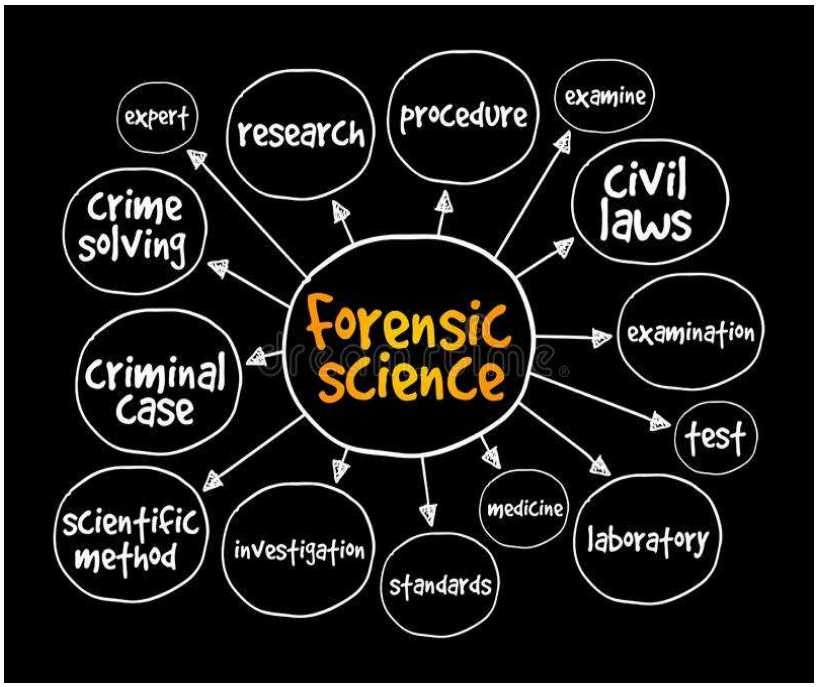
AI IN FORENSIC SCIENCE



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What is FORENSIC SCIENCE ?

- **a critical element of the criminal justice system**
- Forensic science is the application of scientific methods or expertise to the investigation of crimes or the examination of evidence that may be submitted in a court of law.
- From fingerprint and DNA analysis to anthropology and animal forensics, forensic science encompasses a wide range of subjects.
- Despite their diverse backgrounds, all forensic scientists confront the same set of problems.

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Why to used AI in Forensic Science ?

- Artificial intelligence (AI) is a significant and well-established branch of current computer science .
- May frequently give a way of addressing computationally massive or difficult issues in a reasonable time period.
- Digital forensics is a growing field in computing that frequently necessitates the cognitive examination of massive volumes of complicated data.
- As a result, it appears that AI is an appropriate technique for dealing with many of the present difficulties in digital forensics.
- The goal of this study is to provide a high-level overview of AI as it may be applied in digital forensics.
- Digital forensics is a new area that needs extensive computing and the processing of huge and complicated data sets.
- Forensic investigation entails conducting extensive study, gathering information from many sources, and then integrating it in order to reach logical conclusions.
- While extracting such data from 'mysterious' sources may undoubtedly be a fruitful and intriguing profession, dealing with enormous amounts of data can frequently be confusing and chaotic.
- In this case, AI provides a useful tool for dealing with and resolving big data sets .
- During an investigation, AI can assist forensic specialists in properly managing data and doing meta-analysis at multiple levels.

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Purpose to used AI?

- The replication of human intellectual processes by machines, particularly computer systems, is known as Artificial Intelligence.
- Expert systems, natural language processing, speech recognition, and machine vision are some of the specific uses of AI.
- AI systems function by consuming huge quantities of labelled training data, evaluating the data for correlations and patterns, and then using these patterns to forecast future states.
- In this manner, a chatbot given text chat examples may learn to generate lifelike conversations with people, or an image recognition programme can learn to identify and describe things in photos by analysing millions of images.

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AI IN CRIMINAL INVESTIGATION

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- During an investigation, AI can assist forensic specialists in properly managing data and doing meta-analysis at multiple levels.
- This may save forensic investigators a significant amount of time while also ensuring that they have adequate time and motivation to focus on other vital duties!
- The acquired data must also be freely available to the parties involved, so that it may be accessed at any moment as needed.
- AI technology may be used to prepare data repositories so that it can be routinely stored in your systems and accessed as needed.

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- When it comes to criminal investigations, AI can be a great tool in many expects like –
- i. Data analysis and availability to support the investigation.
- ii. Addressing well-scoped problems and methodology for cases.
- iii. Pattern recognition.
- iv. Explaining the reasoning process well.
- v. Reducing the level of false-positive or false negatives during analysis is very common in forensic science.
- vi. Formally structuring the representation of knowledge which will also help the legal community in fast and accurate solution.
- vii. Having a well-organized performance evaluation.
- viii. Data mining and knowledge discoveries.
- ix. Building statistical evidence.
- x. Integrating with current architecture, tools, and applications.

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AI CAN HELP IN RECOGNIZING PATTERNS

- Patterns may be quite particular and complicated at times, making them difficult to follow.
- AI technology can assist in pattern recognition, such as identifying different components of a single image, detecting patterns in emails and messages, and matching new information with various forms of existing data in system databases.
- It can also assist detectives in connecting suspect information with existing criminal records and informing them of any past criminal conduct that the suspect in question may have been involved in.

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ADVANTAGES OF AI IN FORENCIS

- i. It implements automation, which saves substantial time and money while allowing investigators to focus more on areas where fraud may occur.
- ii. It assists businesses with detecting illegal behaviour from massive volumes of unstructured data, such as videos, pictures, emails, and text files.
- iii. It's a more dynamic method than rule-based testing, which can only assess fraud risk across a single data set.
- iv. It eliminates information silos that might hamper an analytics-aided investigation: this occurs when locally-tailored processes prohibit integrated data exchange, creating hurdles to an inquiry.

CONCLUSION :

Artificial intelligence is quickly becoming the most important applied science in all areas of life.

Similarly, the forensic sector is benefiting from it, as long as our system does not become entirely dependent on it.

More and more individuals are realising the importance of AI in everyone's lives and working hard to comprehend it through digital science, which is now in everyone's pocket.

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References : https://deliverypdf.ssrn.com/delivery.php

Thank you
for Attention!!!

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