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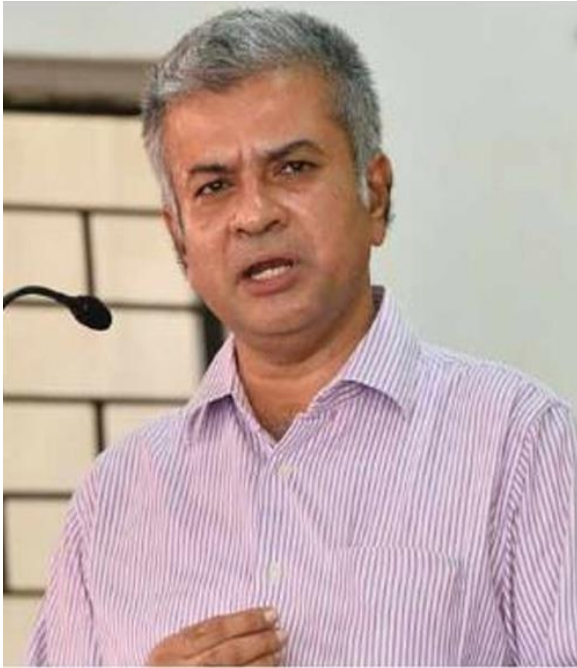
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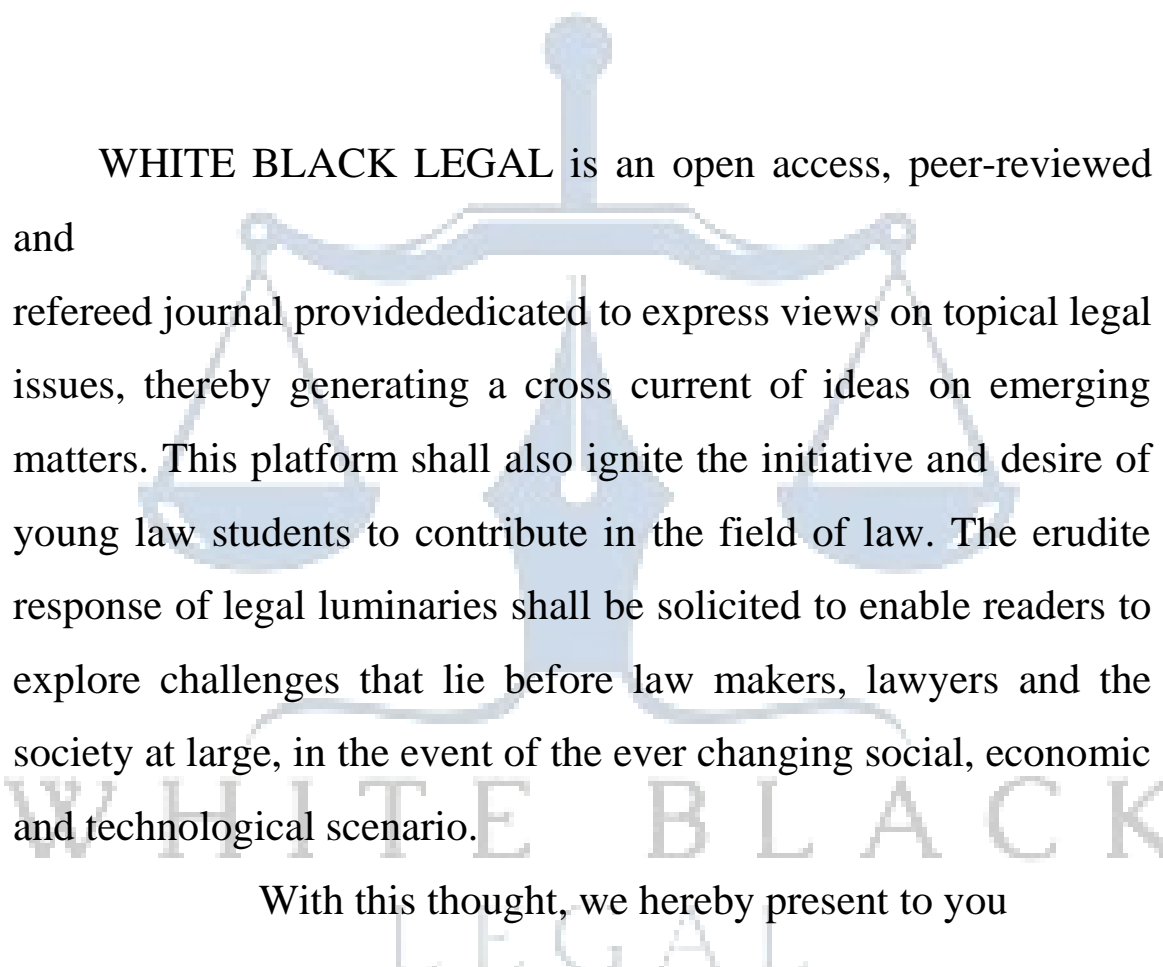


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WHITE BLACK LEGAL is an open access, peer-reviewed and refereed journal providededicated to express views on topical legal issues, thereby generating a cross current of ideas on emerging matters. This platform shall also ignite the initiative and desire of young law students to contribute in the field of law. The erudite response of legal luminaries shall be solicited to enable readers to explore challenges that lie before law makers, lawyers and the society at large, in the event of the ever changing social, economic and technological scenario.

With this thought, we hereby present to you

THE DIGITAL TRAILBLAZER: FORENSIC INNOVATIONS IN EVIDENCE LAW

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INTRODUCTION

The term digital forensics refers to a branch of forensic science that relates to the recovery, handling, and submission of digital evidence in various electronic devices or networks. It can be found in a computer resource as defined under the Information Technology Act 2000 or in any other device viz. mobile, tablet, or storage devices. The branch of digital forensics extends to cloud computing, servers, and all forms of electronic devices capable of storing and processing data in a particular file format. Forensic study refers to the application of scientific principles and other relevant methodologies in order to facilitate criminal investigation enhancing the process of prosecution thereby adding to the process of the criminal justice system. Forensic science is important because it plays a major role in the collection and valuation of the evidence at the crime scene. Without forensic science, the concept of free and fair is next to impossible in the practical sense. With the changing times, digital forensics has gained much importance in the criminal justice system. With the inception of the World Wide Web in the early 90s, the Internet revolution has been fostering dynamic change in the world. Investments, business, and the development of the economy have been instrumental in the revolution of the Internet. Due to this factor, the usage of digital devices like computer resources and mobile has been drastically increased over the time. This has added to the role of such devices in the commission of crime not only in India but worldwide. Thus, the role of digital devices has been tremendously increased in the past two decades. Talking about the present time, the dependency on cyberspace is constantly increasing keeping in mind the adverse effects of the Covid pandemic of 2020. It has been reported in the NCRB Report of 2019-20¹ that cyber crimes which include crimes like cyber fraud, cyberstalking, cyber phishing, cyber harassment, and bullying have exponentially increased over the years. Thus it is the need of the hour to realize the role of digital forensics in the criminal justice system.

¹ NATIONAL CRIME RECORDS BUREAU, MINISTRY OF HOME AFFAIRS, CRIME IN INDIA - 2018, VOL.1, available at <https://ncrb.gov.in/sites/default/files/Crime%20in%20India%202018%20-%20Volume%201.pdf> (last visited Apr. 23, 2024, 8:02 PM).

DIGITAL FORENSICS: EVOLUTION IN INDIA

The statute dealing with the role of digital forensics in India is the Bharatiya Sakshya Adhiniyam, 2023² and the Information and Technology Act, 2000³. While the Bharatiya Sakshya Adhiniyam, 2023 deals with the admissibility and relevancy of the evidence submitted to the Indian courts the latter deals with basic terminologies and processes of the Indian cyberspace. For instance, the definition of a computer resource has been stated in Section 2(k)⁴ of the Information and Technology Act, 2000. The relevancy of digital signature as evidence has been stated under Sections 41⁵ and 73⁶ of the Bharatiya Sakshya Adhiniyam, 2023. Hence, the submission of digital evidence has been incorporated in these sections. Further, the Social Media Rules, 2021⁷ define various other terms related to digital media and further lay down various processes that assist in the handling of matters about cyber crimes.

ADMISSIBILITY OF DIGITAL EVIDENCE

The basic principles of handling digital evidence were for the first time dealt with in the leading case of Lorraine v. Markel wherein the American Federal Court stated certain conditions which are needed to be fulfilled to ensure the admissibility of the evidence in the court. Any digital evidence to be relevant and admissible in the Evidence law must fulfill these conditions which are as follows:

- It should comply with the best evidence rule
- The chain of custody should be followed with care
- The evidence should not be tampered with or interfered
- Stress was laid upon the authenticity of the evidence in the courts. The best evidence as per the Bharatiya Sakshya Adhiniyam, 2023 is considered when it is in its original form.

Section 2(t) of the Information and Technology Act, 2000 defines electronic records. The relevancy of admitting an electronic record as evidence has been laid down under Section 63⁸ of the Bharatiya Sakshya Adhiniyam, 2023.

² Bharatiya Saksh Adhiniyam, 2023, No. 47, Acts of Parliament, 2023 (India).

³ Information Technology Act, 2000, No. 21, Acts of Parliament, 2000 (India).

⁴ Information Technology Act, 2000, § 2(k), No. 21, Acts of Parliament, 2000 (India).

⁵ Bharatiya Saksh Adhiniyam, 2023, § 41, No. 47, Acts of Parliament, 2023 (India).

⁶ Bharatiya Saksh Adhiniyam, 2023, § 73, No.47, Acts of Parliament, 2023 (India).

⁷ Social Media Information Technology (Guidelines for Intermediaries and Digital Media Ethics Code) Rules, 2021, Gazette of India, pt. II, sec. 3(i) (Feb. 25, 2021).

⁸ Bharatiya Saksh Adhiniyam, 2023, § 63, No. 47, Acts of Parliament, 2023 (India).

LEADING CASE LAWS

- *In Dilipkumar Tulsidas v. Union of India*, for the first time, a demand was raised before the Hon'ble Apex Court for the regulation and control of increasing cyber crimes in the country.
- In the case of **Anwar PV v. PK Basheer and Ors.**⁹ It has been elucidated that electronic evidence without certificate U/s 65B cannot be proved by oral evidence and also the opinion of the expert U/s 45A Evidence Act cannot be resorted to make such electronic evidence admissible.
- In **Ziyauddin Burhanuddin Bukhari vs Brijmohan Ramdass Mehra**,¹⁰ the Apex Court made the following observation:
"There is also no doubt that the new techniques and devices are the order of the day. Audio and video tape technology has emerged as a powerful medium through which firsthand information about an event can be gathered and in a given situation may prove to be a crucial piece of evidence. At the same time, with fast development in electronic techniques, the tapes/cassettes are more susceptible to tampering and alterations by transposition, excision, etc. which may be difficult to detect and, therefore, such evidence has to be received with caution. Though it would neither be feasible nor advisable to lay down any exhaustive set of rules by which the admissibility of such evidence may be judged it needs to be emphasized that to rule out the possibility of any kind of tampering with the tape, the standard of proof about its authenticity and accuracy has to be more stringent as compared to other documentary evidence."
Thus, the Apex Court made a primary observation about the handling of digital evidence and its admissibility in the courts for the furtherance of the trial.
- **In Dharambir Vs. CBI**,¹¹ the Delhi High Court has held that compliance to Section 65B is mandatory and the accused is entitled to the active accessible information as well as subcutaneous memory thus, a mirror image of the electronic media where the data is originally stored. Hence the importance of Section 65B of the Bharatiya Sakshya Adhinyam, 2023 was laid down in this case.
- In the case of **Abdul Rahman Kunji**¹², the Calcutta High Court has dealt with the issue of the admissibility of emails as evidence. The Court pointed out that such evidence in

⁹ Anwar PV v. PK Basheer and Ors, MANU/SC/0834/2014

¹⁰ Ziyauddin Burhanuddin Bukhari v. Brijmohan Ramdass Mehra, MANU/SC/0277/1975.

¹¹ Dharambir vs Central Bureau Of Investigation, MANU/DE/0392/2008.

¹² Abdul Rahaman Kunji vs The State Of West Bengal, MANU/WB/0828/2014.

connection with an email can be admitted as evidence only if it satisfies the conditions mentioned under Section 65B

Important terminologies and process in Digital Forensics

- **ASCII and Hex Codes:** These are special codes assigned to every character in the digital data structures. Every character in the digital devices has itself assigned a unique code identified as the ASCII code. The ASCII codes are important because they give a universal and unique identification to every character in the digital devices. It has a significant role in the handling and operating of the data. Nevertheless, it has a very unique role in the matters of digital forensics where the process of data recovery is considered vital.
- **Offset:** Offset refers to how far an element is from the beginning of a file, offset is a number that can be added to the base number to get an address location in a file. Offset helps in reallocating and identifying the file location of the data in question. Without offset it is considered difficult to retain or recover the lost data during investigation.
- **Big Endian:** It is a process to organize bytes of data stored in a storage device. The most significant byte is stored in the lowest or first address location of the data block in the memory while the least significant byte is stored in the last address.
- **Little-endian:** Little-endian is just the opposite of big-endian Most significant byte is stored in the last or the highest address location of the data block in the memory while the least significant byte is stored in the first or lowest address.
- **Dcode tool:** Dcode toll is used to time stamp. It helps to identify whether the data in question is in the format of little endian or big endian. Together with this, it also helps us to know when the last modification of the file was made.
- **Winhex:** Winhex is a hexa decimal convertor: It helps in the recovery from storage devices and thus facilitates the process of data retention and helps in criminal investigation and the justice system.
- **File system:** Operating System has a significant role in the matters of digital forensics. The system in which data is organized on the hard disk is known as the file system. It is of two types: FAT and NTFS.
- **FAT file system:** The FAT file system refers to the file allocation table which includes directory entries that are assigned to every file on the FAT file system, directory entries are stored in clusters. If a file is deleted from the computer it is still there only the first hex is changed.
- **NTFS file system:** It is the Master file table (MFT) created by Microsoft. It takes into

consideration boot records and file positions.

- **Disexplorar for FAT and NTFS**- It helps us to read file system format and get hexadecimal codes and last modification dates.
- **Hardisk write blocker**: It is used for the purpose that the file in the investigation cannot be modified or damaged which will hamper the process of criminal investigation. Another example of such a tool is the password recovery tool.

CONCLUSION

Digital forensics refers to a branch of forensic science that relates to the recovery, handling, and submission of digital evidence in various electronic devices or networks. It can be found in a computer resource as defined under the Information Technology Act 2000 or in any other device viz. mobile, tablet, or storage devices. The branch of digital forensics extends to cloud computing, servers, and all forms of electronic devices capable of storing and processing data in a particular file format. Forensic study refers to the application of scientific principles and other relevant methodologies in order to facilitate criminal investigation enhancing the process of prosecution thereby adding to the process of the criminal justice system. Forensic science is important because it plays a major role in the collection and valuation of the evidence at the crime scene. Without forensic science, the concept of free and fair is next to impossible in the practical sense. With the changing times, digital forensics has gained much importance in the criminal justice system. With the inception of the World Wide Web in the early 90s, the Internet revolution has been fostering dynamic change in the world. Investments, business, and the development of the economy have been instrumental in the revolution of the Internet. Due to this factor, the usage of digital devices like computer resources and mobile has been drastically increased over the time. This has added to the role of such devices in the commission of crime not only in India but worldwide. Thus, the role of digital devices has been tremendously increased in the past two decades. Talking about the present time, the dependency on cyberspace is constantly increasing keeping in mind the adverse effects of the Covid pandemic of 2020. It has been reported in the NCRB Report of 2019-20¹³ that cyber crimes which include crimes like cyber fraud, cyberstalking, cyber phishing, cyber harassment, and bullying have exponentially increased over the years. Thus it is the need of the hour to realize the role of digital forensics in the criminal justice system.

¹³ NATIONAL CRIME RECORDS BUREAU, MINISTRY OF HOME AFFAIRS, CRIME IN INDIA - 2018, VOL.1, available at <https://ncrb.gov.in/sites/default/files/Crime%20in%20India%202018%20-%20Volume%201.pdf> (last visited Apr. 23, 2024, 8:02 PM).