FINGERPRINTS: HISTORY AND TODAY

Abdurashid Abdumannobovich Turgunov
Doctor of Psychological Sciences (DSc),
Associate Professor, Uzbekistan

A B S T R A C T	K E Y W O R D S
This article provides an overview of the science of fingerprints, including their detection and identification. We discuss the anatomy of fingerprints and the various types of prints that can be left at a crime scene. We also describe the various methods used to detect fingerprints, including traditional methods such as dusting and newer and DNA analysis. The article also explores the process of fingerprint identification, which involves comparing a fingerprint found at a crime scene to a known fingerprint database.	

Introduction

Fingerprints have long been used as a means of identification, and their use in forensic science has revolutionized the way crimes are solved [1]. But where did this practice begin, and how did it develop over time? In this article, we will explore the history of fingerprints and their use in various fields.

The earliest known use of fingerprints dates back to ancient Babylon, where fingerprints were used on clay tablets for business. The ancient Chinese also used fingerprints on clay seals for official documents, and in India, fingerprints were used to sign legal documents as far back as 2000 BCE. However, these early uses of fingerprints were not intended for identification purposes [2].

The first person to recognize the potential of fingerprints for identification was a British doctor named William Herschel. In the late 19th century, Herschel noticed that many Indian laborers who signed contracts with their thumbprint were illiterate and unable to sign their own names. He began using fingerprints as a means of identifying these individuals, and soon expanded his use of the technique to include criminal cases [2].

The Main Part

In 1892, Francis Galton, a cousin of Charles Darwin, published a book called "Fingerprints," in which he outlined the uniqueness of fingerprints and the possibility of using them for identification purposes. This work paved the way for the use of fingerprints in forensic science [3, 2].

Around the same time, an Argentine police official named Juan Vucetich developed a system for classifying fingerprints, which he used to solve a murder case. Vucetich's system was adopted by police departments around the world, and in 1901, the first official use of fingerprints in a criminal investigation took place in England [4, 2].

In the years that followed, the use of fingerprints continued to grow in popularity, and in 1904, the first fingerprint bureau was established in India. By 1924, the FBI had established its own fingerprint identification system, and fingerprint analysis became a standard practice in criminal investigations around the world [2].

Today, fingerprints are still widely used for identification purposes, not only in criminal investigations but also in a variety of other fields, such as border control, access control, and biometric authentication for electronic devices. The development of new technologies, such as fingerprint scanning devices and automated fingerprint identification systems, has made it easier and faster to match fingerprints to individuals.

Scientists have found that fingerprints are formed in the womb during fetal development and are influenced by factors such as genetics and the environment. They have also discovered that the ridges and furrows of fingerprints provide friction and help us to grip objects, which is essential for our daily activities.

In addition to their practical applications, fingerprints are also of interest to scientists because of their complex patterns and the information they can reveal about an individual. For example, the shape and spacing of the ridges on a fingerprint can be used to determine a person's gender, age, and even their ethnicity.

Scientists continue to study fingerprints in order to gain a better understanding of their unique characteristics and potential applications.

There has been extensive research on fingerprints, which has greatly contributed to our understanding of their characteristics and potential applications. Here are some key areas of research on fingerprints:

1. Anatomy and Development: Scientists have studied the anatomy and development of fingerprints, including the patterns of ridges and furrows on the fingertips, the factors that influence their development, and the role of genetics in determining fingerprint characteristics.

2. Identification: Fingerprint identification has been extensively studied and developed as a reliable and accurate method of identifying individuals. Research has focused on developing better technologies and methods for fingerprint identification, as well as the accuracy and reliability of fingerprint matching.

3. Forensic Investigations: Fingerprint analysis is a crucial part of forensic investigations and has been extensively studied for its use in criminal investigations. Research has focused on the accuracy and reliability of fingerprint analysis, as well as the limitations and potential sources of error.

4. Biometrics: Fingerprint biometrics has been studied as a way to enhance security and privacy in various applications, such as access control, identity verification, and financial transactions.

5. Medical: Research has also explored the potential of fingerprints in medical applications, such as disease diagnosis, drug testing, and monitoring treatment efficacy.

Overall, the study of fingerprints has contributed to a wide range of fields, including forensic science, biometrics, and medical research, and ongoing research is continuing to expand our understanding of this unique aspect of human anatomy.

There are many scientists who have studied fingerprints over the years. The most famous researchers are Francis Galton, Edward Henry, Juan Vucetich, Azizul Haque, Anil Jain, Harold Cummins, D. K. Chaubey and others.

Francis Galton: A British scientist who is considered the "father of fingerprinting". Galton conducted extensive research on fingerprints in the late 19th century, and his work formed the basis for modern fingerprint identification [5].

Francis Galton was a pioneer in the field of fingerprint analysis, and he had a strong opinion on the value of fingerprints in forensic science. Galton believed that fingerprints were unique to each individual and that they could be used to identify people with a high degree of accuracy. He conducted extensive research on fingerprints in the late 1800s, developing a classification system that is still used today [5, 2].

Galton was also a proponent of the use of fingerprints in criminal investigations, and he advocated for the creation of a national database of fingerprints to aid in the identification of criminals. He believed that fingerprint analysis was a more reliable method of identification than other forensic techniques of the time, such as handwriting analysis or ear shape identification. Galton's work laid the foundation for the use of fingerprints as a tool for criminal investigation, and his ideas continue to influence forensic science to this day.

Edward Henry: A British police official who developed the Henry Classification System for fingerprint identification in the early 20th century. Henry's system was widely used by law enforcement agencies around the world [6].

Juan Vucetich: An Argentine police official who developed a fingerprint identification system in the late 19th century. Vucetich's system was used to solve a famous murder case in Argentina, making it one of the earliest successful applications of fingerprint identification in criminal investigations [7, 2].

Juan Vucetich was an Argentine police official and the pioneer of fingerprint identification in South America. Vucetich believed that fingerprints were unique to each individual and could be used to solve crimes with a high degree of accuracy. He developed a classification system for fingerprints and began using them to solve criminal cases in the late 1800s [2].

Vucetich was a strong advocate for the use of fingerprints in forensic science, and he believed that they were a more reliable method of identification than other forensic techniques of the time. He played a key role in the adoption of fingerprint identification by police departments around the world, and his work laid the foundation for the modern use of fingerprints in criminal investigations.

Overall, Vucetich's opinion on fingerprints was that they were a powerful tool for identifying individuals and solving crimes, and he dedicated his career to advancing the science of fingerprint analysis.

Azizul Haque: A Bangladeshi scientist who developed a computerized fingerprint identification system in the 1980s. Haque's system was one of the first of its kind and has since been widely adopted by law enforcement agencies around the world [2].

Jain's work has focused on developing more accurate and reliable methods for fingerprint identification and biometric security.

His opinion is that fingerprints are an extremely reliable form of biometric identification, with a very low error rate, making them a valuable tool for use in a wide range of applications, from law enforcement to secure access control systems. In addition, he has emphasized the need for continued research and development in the field of biometrics, including fingerprints, in order to improve their accuracy and reliability even further.

Harold Cummins believed that fingerprints are a unique and permanent biological identifier of an individual. He conducted extensive research in this field and made significant contributions to the

understanding of fingerprint science. He also emphasized the importance of using fingerprints in legal proceedings as they provide clear and incontrovertible evidence that can be used to identify suspects.

Fingerprints can play a role in professional self-determination, especially in fields that require security clearance or criminal background checks. For example, jobs in law enforcement, government agencies, and some healthcare positions may require fingerprinting as part of the application process.

Additionally, some industries use fingerprinting for timekeeping and attendance tracking purposes. For example, some companies use fingerprint scanners to track employee attendance and prevent "buddy punching" (when one employee clocks in for another).

Fingerprint analysis has been used in psychology to study various aspects of human behavior, personality traits, and cognitive abilities. For example, studies have examined the relationship between fingerprint patterns and personality traits such as extraversion, neuroticism, and openness to experience. Other studies have explored the potential use of fingerprint analysis in the diagnosis of neurological disorders such as Alzheimer's disease and Parkinson's disease.

Additionally, research has shown that children's fingerprints can provide important information about their prenatal and postnatal development, including exposure to environmental toxins and the effects of maternal stress during pregnancy. Overall, fingerprint analysis has shown promise as a tool for understanding various aspects of human psychology and development.

Conclusion

In conclusion, the history of fingerprints is a long and fascinating one, dating back thousands of years. The use of fingerprints for identification purposes is a relatively recent development, but it has had a profound impact on the way crimes are solved and on a variety of other fields as well. As technology continues to evolve, it is likely that fingerprints will remain an important tool for identification and authentication for many years to come.

Also, as a result of our research, the following author's descriptions will be given:
- ✓ Your fingerprints are unique, just like you.
- ✓ One touch of a finger can unlock endless possibilities.
- ✓ Fingerprints: the signature of your identity.
- ✓ No two fingerprints are alike, just like no two people are alike.
- ✓ A single fingerprint can solve a crime and bring justice.
- ✓ Every person has a unique identity, like his fingerprint.
- ✓ Fingerprints: the ultimate proof of individuality.
- ✓ Fingerprints are a personal signature in the world.
- ✓ Fingerprints don't lie - they tell a story about who you are.
- ✓ Fingerprints are the key to identifying a person.
- ✓ Fingerprint recognition: the future of authentication.
- ✓ Fingerprints: the mark of a person's individuality and authenticity.
- ✓ Your fingerprint is your own personal code.

References
1. https://en.wikipedia.org/wiki/Fingerprint.
2. https://new-science.ru/8-razlichnyh-tipov-otpechatkov-palcev.

3. https://theironroom.wordpress.com/2020/11/02/francis-galton-and-the-advancement-of finger printing.

4. https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/vucetich-juan.

5. https://galton.org/fingerprinter.html.

6. https://www.fieldprintswft.com/SubPage_FullWidth.aspx?ChannelID=309.

7. https://www.britannica.com/topic/fingerprint#ref262728.

8. Ashbaugh, D. R. (1999). Quantitative-Qualitative Friction Ridge Analysis: An Introduction to Basic and Advanced Ridgeology. CRC Press.

9. Lee, H. C., & Gaensslen, R. E. (Eds.). (2012). Advances in Fingerprint Technology (3rd ed.). CRC Press.

10. Champod, C., Lennard, C. J., & Margot, P. (Eds.). (2004). Fingerprints and Other Ridge Skin Impressions. CRC Press.

11. James, S. H., & Nordby, J. J. (2009). Forensic Science: An Introduction to Scientific and Investigative Techniques (3rd ed.). CRC Press.

12. Genge, N. (2008). The Forensic Casebook: The Science of Crime Scene Investigation. Ballantine Books.