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FORENSIC SCIENCE AND ITS APPLICATION IN CRIME DETECTION

AUTHRED BY –

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ABSTRACT

The contemporary state of research is rapidly expanding, thanks in large part to forensic science, which uses scientific techniques to produce impartial, circumstantial evidence. Thus, the logical proof is provided to an ever-increasing extent, but it also becomes more and more specialized, and it is frequently becoming less and less plausible to non-researchers. The phrase "forensic science" refers to a broad field of research that involves many other scientific disciplines and spans almost all medical specialties. A combination of common sense and prior knowledge from obstetrics, surgery, and other medical specializations is required. The discipline of forensic science has grown dramatically during the past 25 years, leading to important scientific developments (DNA typing, databases of physical evidence, and related scientific instruments). Due to a lack of funding, forensic procedures are rarely applied in most criminal investigations. Studies on the costs of DNA testing and how it affects the settlement of cold cases and property crimes have become more in-depth. However, no studies have examined the entirety of the physical evidence as well as how cases are processed by the criminal court system. Examination of the evidence may help the investigative team determine how a crime was committed.

The study's focus will be on the role of forensic science in criminal justice. Additionally, forensic science will be presented in connection to criminology as a whole; it will not concentrate on any specific scientific sector or criminal activity. Additionally, forensics specialists and other expert witnesses whose evidence can be trusted by a court are included in the research. Recent studies have indicated a substantial tendency in the conviction of innocent people. Furthermore, it is impossible to ignore or dispute this phenomenon. Due to their special experience, specialists currently hold a significant position in the area. The research project will cover the comparable value of quantifiable science in criminal

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legislation and its influence on people. In a modern context, it refers to something having to do with the law or courts. Measurable science hence references the use of logical principles and regulatory cycles. To put it another way, forensic science is the use of information and techniques from numerous scientific disciplines, including physics, biology, chemistry, pharmacy, anthropology, archaeology, and psychology, in judicial proceedings. Law and science do not get along very well. But they have come together to work for justice. Forensic science is useful in both civil and criminal investigations. Whether or not the evidence was found at the crime scene, it is taken to labs for analysis utilizing a range of technologies and methodologies. This type of evidence analysis is made feasible by forensic science and its several subfields.

I. INTRODUCTION

Studying and applying science to legal situations is one approach to defining forensic science. The relationship between science and law creates new possibilities for discovering the truth. The word "forensic" comes from the Latin word "forum," which refers to a public forum where Roman senators and other people discussed and conducted legal processes. The origin of the word "forensic" is the word "forensic." Investigation of crime scenes and the gathering of evidence for a court case are tasks carried out by forensic science, a multidisciplinary profession. Forensic science techniques are used to assess if international agreements concerning WMD are accepted. In the past, the main disciplines used in forensic science were biology, chemistry, and medicine. Subfields of forensic science have grown over time, including toxicology, cyber forensics, handwriting, fingerprinting, ballistics, anthropology, geology, forensic engineering, and penology. Forensic scientists analyse items, materials, chemicals (paints, explosives, toxins), tissue traces (hair, skin), imprints (fingerprints or tidemarks), and materials (such as blood or drug samples) left at the crime scene. Forensic experts are a crucial source of information for both national and international criminal processes. Mass grave knowledge is not an exception: Trials and decisions of the ad hoc tribunals have used information from exams and exhumations. The fact of the situation is that comparatively speaking, not many professionals are well equipped to apply science to every day, criminal, and familial legitimate difficulties.

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II. RESEARCH OBJECTIVES

The purpose of this essay is to examine the use of forensic science in criminal investigations and its role in preserving social order. Additionally, this research clarifies how forensic science connects medical and legal scientists. Some crimes have existed since the dawn of humanity or have always existed. The concept of crime and the methods that criminals employ to commit crimes have undergone significant change because of advances in science and technology. Police detectives can no longer rely on sophisticated criminals' time-honoured techniques of questioning, source development, and surveillance to find crimes. However, the cunning criminal has been quick to use science as a weapon in his crimes. The development of forensic science is relevant in this situation because a civilized society cannot tolerate the brutal and painful methods of crime detection. The police inquiry has no other choices in these situations besides the evolving science. Its improvement has been a tremendous help to the legal and police departments.

III. ROLE OF FORENSIC SCIENCE IN CRIME DETECTION

Today, forensic science plays a significant role in the legal system. It plays a significant but generally ignored role. Everything discovered at a crime scene, including fingerprints, blood splatter, DNA samples, injuries, and a lot more, tells a tale that can be pieced together according to forensic science. Without forensic science, criminals would go unpunished, and it would be very challenging to find them guilty. Forensic science can prove the existence of a crime, the identity of the perpetrator of a crime, or a connection to the crime through the examination of physical evidence, the administration of tests, the interpretation of data, clear and concise reporting, and the truthful testimony of a forensic scientist. Regarding the claimed crime, it answers the "who, what, when, where, and how" questions.

It can be utilized by both the defense and the prosecution to prove the accused's innocence. On the one hand, the prosecution can use it to prove the accused's guilt beyond a reasonable doubt. One method used to catch infamous serial killer Ted Bundy was bite marks.

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Tommie Lee Andrews was identified by a victim in a line-up, two fingerprints left on a victim's window, and the same blood type left at each incident after a serial rapist scared 23 women in Orlando in 1987. Using DNA testing on death row inmates, Illinois Governor George Ryan discovered that 13 of the 25 prisoners may be set free in 1998. 2010 saw the conviction of Baptist minister Matt Baker for killing his wife. The genuine crime, which was previously thought to be a suicide, was revealed after looking through Baker's search history. He had looked up "overdosing on sleeping drugs" and visited several pharmaceutical websites before his wife passed away. The DNA analysis of the skull and burned muscle discovered at the scene allowed for the identification of the self-destructive aircraft responsible for the killing of the previous head of state Rajiv Gandhi.

To fully understand the horrifying crime in the Nithari case, hundreds of bones and skeletal remains were studied, and the accused underwent psychoanalysis. Because there were no eyewitnesses, forensic evidence was essential to cracking the sensational Neeraj Grover murder case. The skeletal bones discovered in a forest close to the Raigad area were identified as Sheena Boras through DNA testing. With the use of forensic science, the 2017 gang rape and murder of Kotkhai, which shook India, was substantially solved.

IV. FINDINGS & CONCLUSION

Following design considerations, the morphing UAV wing model is created in Solid works, imported into Ansys/Static Structural, and put under various loadings. According to the aerodynamic lift load study, the loading and deflection over have both been computed. The findings demonstrate that the loads on the extended portion significantly affect the wing, with the extended section's tip experiencing the most deflection. Additionally, the moment force causes the deflection to increase further, as seen by the applied moment loading in one instance. Additionally, the anxiety levels increased at the pivoting joints connecting two wing regions. The wing's maximum and minimum amounts of stress are estimated using Von Misses stress. Their differences are seen in the way that anxiousness takes. Deflection and stress levels are shown as colored outlines, from lowest to greatest. They are shown next to one another. The wing structure's best analysis satisfies the demands for strength and stability.

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Forensic science is the application of scientific methods, procedures, and techniques and is "directed to the recognition, identification, individualization, and evaluation of physical evidence via the application of the natural sciences to law-science concerns." It has numerous subfields, including geography, medicine, brain research, material science, and more. Nevertheless, a few people have adopted the broad stance that, independent of the subspecialization, "forensic science comprises the application of scientific concepts and methodologies to the appraisal of evidence." Because it involves the scientific investigation of evidence, forensic science plays a significant role in the justice systems of many nations. The importance of forensic evidence in the prosecution of criminal cases is acknowledged by the law. Scientific methods can produce convincing evidence for identifying and establishing illegal behavior when they are used properly and without bias. International criminal cases frequently include several older, less advanced techniques in addition to DNA testing, which continues to receive strong court support. Perhaps the earliest forensic technique is finger and palm print identification, which dates to the Chinese around 650 A.D.

Défense attorneys regularly use forensic evidence to convict and exonerate defendants. As a result, there are now much more crime labs than there were a few decades ago. Unique demonstrations have been requested in the US, Canada, UK, and Australia to advance the legal system and increase the conviction rate by making it easier to identify crime with certainty. They put more an emphasis on managing crime scenes quickly and effectively. The first authorized crime laboratory in India was founded in 1878. Currently, there are around 35 faulty labs in the nation that are restricted to certain types of confirmations. The number of crime laboratories has increased because of the constantly developing and growing field of forensic science as well as the crucial role that forensic evidence plays in many criminal cases.

This rapidly evolving area puts increased pressure on law enforcement organizations to properly gather evidence. The news media highlights mistakes committed when finding, identifying, securing, handling, and presenting forensic evidence in addition to how important forensic science evidence is in high-profile cases. Professor Margot contends that forensic science must be used in law enforcement's investigative processes. The scientist needs full control of the scene and access to case information to choose prospective findings. Expert witness testimony is a valuable source of information in international criminal procedures,

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and mass grave forensic scientific expertise is no exception: The trials and rulings of the ad hoc tribunals have incorporated the results of investigations and exhumations. Even while national legal systems have studied the connection between law and science, the Court's use of a mixed system provides an old issue and a fresh setting. An officer who has obtained further training in forensic science runs the risk of being overconfident and unintentionally tainting evidence, making it inadmissible. On the other hand, competent forensic science instructors should conduct appropriate training, which is more likely to improve rather than worsen the situation, as a significant amount of crime scene evidence is currently inadmissible due to improper collection (if it is not trampled on and left uncollected entirely). This science frequently results in the conviction of the guilty or the exoneration of the innocent due to its explanatory capacity.

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