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# The Role of Artificial Intelligence in Evidence Gathering for International Criminal Trials: Opportunities, Challenges, and Legal Frameworks

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**Abstract**

The emergence of Artificial Intelligence (AI) and advanced digital technologies has significantly transformed the landscape of international criminal justice, particularly in the collection, preservation, and management of evidence relating to grave international crimes. In contemporary conflicts, where atrocities increasingly leave digital traces across online platforms, satellite networks, and electronic communications, traditional investigative mechanisms alone are often insufficient. The ongoing armed conflict in Ukraine exemplifies this transformation, demonstrating how AI-driven technologies, open-source intelligence (OSINT), satellite imagery, and digital forensic tools are being utilized to document war crimes, authenticate evidence, and support accountability mechanisms before international tribunals. This research critically examines the expanding role of AI in evidentiary practices within international criminal trials, with particular emphasis on its compatibility with established principles governing admissibility, reliability, authenticity, and procedural fairness under international law. The study analyses the legal framework established under the Rome Statute of the International Criminal Court, alongside relevant human rights instruments and customary international law, to evaluate whether AI-assisted evidence can satisfy the standards required in international criminal proceedings. It further explores critical concerns surrounding algorithmic bias, transparency, data integrity, privacy violations, and the protection of due process rights.

The research adopts a doctrinal and analytical methodology, drawing upon treaties, judicial decisions, scholarly literature, and emerging practices within international tribunals. It also considers practical challenges arising in conflict zones, including restricted access to crime scenes, fragmented witness accounts, and the overwhelming volume of digital evidence generated through social media, surveillance technologies, and open-source platforms. In this context, AI presents significant opportunities to enhance investigative efficiency, corroborate evidence, reconstruct events, and strengthen prosecutorial capabilities. However, the absence of comprehensive regulatory guidelines governing AI deployment within international criminal justice raises substantial ethical and procedural concerns.

The study argues that while AI possesses transformative potential to strengthen accountability for genocide, crimes against humanity, war crimes, and terrorism, its integration into judicial processes must remain firmly anchored in the rule of law, human rights protections, and principles of fair trial. It emphasizes the urgent need for transparent standards, judicial oversight, specialized expertise, and

ethical safeguards to ensure that technological innovation does not compromise adjudicative integrity. Ultimately, the research proposes the development of a coherent legal and institutional framework that harmonizes technological advancement with the foundational principles of international justice, thereby enabling AI to function as a credible and responsible tool in the global pursuit of accountability for the gravest crimes against humanity.

## CHAPTER I INTRODUCTION

"In an era where crimes leave footprints not just in physical spaces but across digital landscapes, justice demands new tools where algorithms shift through oceans of data to uncover truth and technology becomes the silent witness in courts of humanity."

The ongoing armed conflict in Ukraine stands as a vivid example of how digital technologies have transformed the documentation and prosecution of violations of international law. Amid widespread destruction and mass atrocities, Ukrainian authorities have increasingly leveraged innovative digital tools from open-source intelligence platforms to AI-driven data analysis to collect, authenticate, and preserve evidence of war crimes. This development highlights the practical challenges of conducting investigations in modern, technologically complex warfare while underscoring the transformative role that technology plays in ensuring accountability, supporting judicial processes, and safeguarding the rights of victims in an era defined by rapid technological change.

Artificial Intelligence (AI), in particular, has ushered in profound transformations across multiple domains, including international criminal justice. AI's ability to improve the collection, preservation, and analysis of evidence takes on heightened significance given the complex and transnational nature of crimes prosecuted before international tribunals. Crimes such as genocide, crimes against humanity, war crimes, and terrorism frequently involve multifaceted evidentiary networks spread across multiple jurisdictions, diluting the efficacy of conventional investigative approaches. AI and other technological innovations provide powerful tools to supplement investigative capacity, streamline processes, and enhance the effectiveness of judicial mechanisms tasked with holding perpetrators accountable.

However, the use of AI-driven methodologies in evidentiary practices simultaneously raises profound juridical, ethical, and procedural concerns. Central among these concerns are questions surrounding the admissibility and probative value of AI-generated or AI-assisted evidence, the preservation of due process rights, safeguarding data integrity, and mitigating algorithmic bias that could distort judicial outcomes. International criminal proceedings are governed by established legal regimes, including the Rome Statute and complementary human rights instruments that set forth standards for fair trial guarantees, privacy protections, and impartial justice administration. Yet, the absence of explicit guidelines or a clear jurisprudential consensus on integrating AI into these frameworks creates notable gaps in regulatory oversight and procedural safeguards.

The Rome Statute of the International Criminal Court (ICC), along with relevant treaties, customary international law, and human rights instruments, provides a robust framework for evidence collection and submission. It emphasizes safeguarding procedural fairness, ensuring evidence reliability and authenticity, and protecting the rights of both victims and the accused. As AI technologies are increasingly deployed to manage large volumes of digital data, reconstruct events using satellite imagery, analyze communications, or detect behavioral patterns, longstanding evidentiary safeguards face unprecedented challenges. Critical questions arise like does AI-assisted evidence meet established thresholds of admissibility? How can such evidence be verified or cross-examined? Do algorithmic

processes risk perpetuating bias or violating privacy rights enshrined in international law?

Moreover, international crimes often occur in environments marked by armed conflict, state collapse, or fragile governance. In such cases, AI-assisted tools can overcome significant obstacles limited physical access to crime scenes, fragmented witness testimony, and dispersed data sources holding great promise for advancing accountability. The analytical power of AI enables the preservation and corroboration of evidence even when traditional investigative methods are impaired. Yet, deploying AI in such sensitive contexts requires balancing efficiency with legality, technological innovation with ethical responsibility, and expedition with justice.

The complexity of international crimes demands specialized methods for collecting and managing evidence, especially given the volume and diversity of digital materials available today. Activities such as reviewing video footage, analyzing online content, and sifting through massive datasets from open sources would take years manually. This reality necessitates a paradigm shift in evidentiary standards, verification processes, and management strategies. Investigations today cannot rely solely on traditional analog techniques but must embrace cutting-edge digital technologies to keep pace with the digital age. Acknowledging these realities, the ICC has taken proactive measures to incorporate advanced tools into its investigative processes. Recent initiatives involving digital evidence collection and management demonstrate the ICC's commitment to adapting its mechanisms for the digital era, reinforcing justice in cases involving the gravest crimes facing humanity.

This research critically examines AI's expanding role in evidence collection and management within international criminal trials, focusing on whether AI deployment can align with existing evidentiary norms, ensuring adjudicative integrity and protection of individual rights. Employing a doctrinal methodology, the study analyzes relevant treaties, judicial precedents, and scholarly literature, supplemented by empirical insights from interviews with legal experts and practitioners. It interrogates how AI tools conform to or challenge principles of legality, accountability, and ethical governance within international criminal justice. The research further explicates the attendant risks and opportunities inherent in AI-assisted investigations, particularly concerning data provenance, applicability to admissibility standards, transparency, and necessary oversight to prevent abuse or miscarriages of justice. Systematic analysis of both normative and practical aspects informs the development of a coherent legal framework that harmonizes technological advancements with the imperatives of the rule of law and the protection of fundamental rights. This study aims to provide policymakers, judicial authorities, and human rights bodies with concrete recommendations for the prudent and equitable incorporation of AI into international criminal proceedings. Through this endeavor, it seeks to nurture an informed discourse that balances innovation with fairness, legitimacy, and accountability—the founding principles of the international legal order.

In closing, the integration of AI in international criminal justice offers transformative potential to enhance investigative capacities and judicial outcomes. Yet, this potential must be carefully harnessed to navigate complex legal, ethical, and procedural challenges. Balancing technological possibilities with human rights protections, adherence to evidentiary standards, and judicial oversight is vital. As international criminal tribunals continue adapting to the digital era, establishing clear guidelines, specialized expertise, and robust ethical frameworks will be essential to ensure AI serves as a tool that strengthens, rather than undermines, justice. Through thoughtful, coordinated efforts, AI can become an indispensable ally in the ongoing global endeavor to hold perpetrators of the gravest crimes accountable under international law.

## 1.1. STATEMENT OF PROBLEM

International criminal trials are increasingly reliant on digital evidence to establish responsibility for grave crimes such as genocide, war crimes, and crimes against humanity. Artificial Intelligence (AI) offers significant promise in enhancing the collection and analysis of this evidence by enabling the processing of vast data sets, detecting patterns, and facilitating judicial decision-making. However, AI's integration into international criminal proceedings poses substantial challenges, including concerns about data accuracy, algorithmic bias, privacy infringement, and the legal admissibility of AI-generated findings. Currently, there is a notable gap in comprehensive research addressing how AI can be effectively and ethically incorporated into these trials while upholding evidentiary standards, human rights, and procedural fairness. This calls for systematic exploration and the development of robust frameworks to manage AI's risks and benefits, ensuring that this powerful technology supports justice without compromising fundamental legal and ethical principles.

## 1.2. OBJECTIVES OF THE STUDY

- To examine the current applications of Artificial Intelligence (AI) in evidence collection, analysis, and pattern identification in international criminal investigations.
- To evaluate the challenges and risks associated with using AI, including algorithmic bias, data accuracy issues, privacy violations, and legal admissibility in international criminal proceedings.
- To propose a comprehensive balance for integrating AI technologies in international criminal proceedings that balances investigative efficiency, human rights protection, and judicial fairness.

## 1.3. RESEARCH HYPOTHESIS/QUESTION

### 1.3.1 RESEARCH HYPOTHEIS

The use of Artificial Intelligence in evidence gathering for international criminal trials poses substantial risks to due process and evidentiary integrity in the absence of clear international legal frameworks governing data reliability, authenticity, and privacy.

### 1.3.1 RESEARCH QUESTIONS

- How is Artificial Intelligence currently being applied in the collection, analysis, and interpretation of digital evidence in international criminal investigations?
- What are the key challenges and risks associated with using AI in international criminal proceedings, including algorithmic bias, data accuracy, privacy concerns, and admissibility in court?
- How can AI technologies be effectively and ethically integrated into international criminal proceedings to enhance investigative efficiency while safeguarding human rights and judicial fairness?

## 1.4. REVIEW OF LITERATURE

The body of scholarly literature on digital evidence in international criminal law reveals a broad consensus about its transformative potential and the challenges it presents. Scholars such as Marco Roscini (2016) emphasize that while existing international criminal law rules do not explicitly address digital evidence, the general evidentiary principles of international tribunals such as relevance, probative value, and fairness can accommodate these new materials. Roscini points out several key challenges in handling digital evidence, including verifying identities, managing hearsay, preserving the chain of custody, and ensuring evidence integrity. This works underscores the need for adapted procedural

practices that maintain credibility while embracing technological advances.

Chiara Ragni's 2023 work further explores the evolving role of digital technologies in prosecuting international crimes, especially focusing on human rights concerns arising from digital evidence use. Ragni stresses the importance of creating comprehensive frameworks and best practices that address the complexities linked to digital evidence gathering, especially in conflict zones where drone footage, satellite images, and social media content play critical roles in documenting war crimes and human rights violations. The challenges associated with ensuring privacy, security, and due process protections amid massive and diverse digital datasets remain core issues. Scholars Rebecca J. Hamilton and Julian Nicholls (2018) corroborate the importance of emerging technologies including AI, drones, and social media analytics in enhancing investigative capacities while underscoring the risks of data manipulation and privacy infringements.

Lindsay Freeman's (2021) research notably explores the increasing use of open-source digital materials, particularly hacked and leaked data, in international criminal proceedings. While these sources offer unprecedented accessibility to information, Freeman highlights the serious legal and ethical dilemmas surrounding admissibility, raising questions about how tribunals might navigate the use of evidence obtained illicitly. Freeman and Raquel Vazquez Llorente's (2021) collaborative article further articulates the double-edged nature of digital evidence provides invaluable insights but also demands careful management of fairness, privacy, and authenticity concerns. Hanna Kuczyńska's 2024 article assesses the International Criminal Court's adaptation to the digital era, focusing on innovations like OTPLink and Project Harmony, which utilize algorithmic platforms to better manage and analyze digital evidence. Kuczyńska frames this technological integration as an ambiguous evolution or revolution, sparking debates over the pace and implications of technological change in international justice.

Riccardo Vecellio Segate (2021) provides critical perspectives on how cognitive biases, privacy rights, and AI-driven evidence intersect in international criminal proceedings. His work illuminates the challenges AI poses, emphasizing the necessity of balancing effective prosecution with robust human rights safeguards. In particular, Segate stresses the risk of cognitive biases influencing interpretations of AI-generated data, potentially skewing judicial outcomes if unchecked. This reinforces the broader scholarly call for greater ethical oversight, transparency, and technical competence among legal practitioners.

Across the literature, there is clear agreement that while digital evidence expands investigative horizons and helps overcome geographic and temporal barriers, its effective and just use hinges on rigorous analytical methods, validation protocols, and enhanced technical training. Freeman and colleagues highlight the overwhelming volume and diversity of digital data, noting the critical task of "finding the signal in the noise" when sifting through complex datasets. Maintaining evidence authenticity, protecting the chain of custody, and guarding against mishandling or unlawful acquisition continue to be paramount concerns.

Scholars also observe growing juridical convergence as international dispute resolution evolves to harmonize procedural standards, promote predictability, and encourage consistency across tribunals. Roscini and others emphasize that this harmonization is essential given the transnational scope of modern crimes and the technological complexity of evidence. Yet, despite these trends, Kuczyńska and Freeman & Llorente acknowledge that legal frameworks often lag behind rapid technological advances, requiring continual reforms. Segate highlights the delicate balance tribunals must maintain between procedural safeguards and operational efficiency to uphold legitimacy and fairness in an era of

sophisticated digital evidence.

In summary, digital evidence and AI tools have become central to contemporary international criminal proceedings, revolutionizing fact-finding, documentation, and prosecution of complex crimes. The literature points to the immense promise of these technologies in enhancing justice, corroborating testimonies, and enabling tribunals to manage evidence across multiple jurisdictions and diverse formats. However, the successful integration of digital evidence depends on bridging technological innovation with sound legal practices ensuring authenticity, transparency, privacy protections, and fairness are rigorously upheld. This requires standardized guidelines, ethical oversight, judicial capacity building, and international cooperation. Only by carefully navigating these intertwined challenges can international criminal justice fully harness digital evidence's potential without compromising the fundamental principles of fairness, accountability, and human rights.

## 1.5.RATIONALE OF STUDY

The rapid advancement of digital technologies has profoundly transformed evidence collection and analysis in international criminal law, providing tribunals with powerful tools like Artificial Intelligence (AI) to process vast datasets, uncover hidden criminal patterns, and verify digital evidence authenticity, thereby enhancing investigative efficiency and accuracy in prosecuting complex crimes such as genocide, war crimes, and crimes against humanity. However, AI's integration presents significant legal, procedural, and ethical challenges including issues around admissibility, reliability, human rights compliance, and cross-border data handling that necessitate careful judicial oversight to maintain fairness and transparency. This study addresses these challenges by analyzing landmark cases like Lubanga, Ongwen, Al Mahdi, and Ayyash, and exploring emerging trends such as predictive justice and blockchain technology, aiming to provide practical recommendations for standardizing evidentiary procedures, ensuring ethical frameworks, and balancing technological innovation with the integrity and legitimacy of international criminal justice.

## 1.6.RESEARCH METHODOLGY

This research adopts a doctrinal methodology within a defined timeframe to systematically explore the integration of Artificial Intelligence (AI) in evidence gathering for international criminal proceedings. It focuses on ethical, legal, and procedural considerations surrounding AI usage while emphasizing the protection of fairness, privacy, and human rights. The study primarily involves detailed analysis of legal principles, statutes, treaties, regulations, and case law relevant to digital evidence, AI, and data protection, especially within the jurisdiction of international criminal tribunals such as the International Criminal Court (ICC). Data for the study will be drawn from both primary and secondary sources. Primary sources include relevant international treaties, legislative instruments, and jurisprudence, while secondary sources encompass scholarly books, peer-reviewed journal articles, official reports, and reputable media coverage providing interpretations and critical commentary on these materials. Through a critical review, synthesis, and interpretation of this literature, the study aims to identify current legal standards, procedural safeguards, and ethical challenges, as well as gaps in the regulation and application of AI in international criminal justice. This doctrinal approach supports the construction of a nuanced understanding of AI-driven evidence collection, evaluating its potential risks and benefits, and informing proposals for responsible and equitable frameworks for AI's use in international criminal trials.

## 1.7.SCOPE AND LIMITATION

This study examines the integration of Artificial Intelligence (AI) in evidence gathering within

international criminal proceedings, focusing specifically on cases of genocide, war crimes, and crimes against humanity. It highlights the opportunities AI offers to process vast amounts of digital and visual evidence, discover patterns of criminal behavior, and enhance judicial decision-making. The study critically investigates how AI can both ensure and jeopardize the accuracy and verifiability of digital evidence, addressing concerns about the potential for AI to introduce or exacerbate biases during evidence analysis. Additionally, the research explores privacy risks associated with AI-assisted investigations and their effects on defendants, witnesses, and victims. Concentrating primarily on international criminal tribunals, with a particular emphasis on the International Criminal Court (ICC), the study analyzes the practical applications and implications of AI technology in the collection, analysis, and presentation of evidence in the context of international criminal justice.

### 1.8.CHAPTERIZATION

1. Introduction
2. Evolution of AI in documenting evidence
3. Legality of AI and digital evidence in international criminal cases
4. Challenges in AI assisted evidence
5. Emerging Trends in AI in International Criminal Evidence Gathering
6. Suggestion and Conclusion

## CHAPTER II

## EVOLUTION OF AI IN DOCUMENTING EVIDENCE

Using Artificial Intelligence (AI) to document evidence is truly changing the way international criminal investigations are done. It helps investigators work faster, more accurately, and with greater care to preserve the truth. But as these digital crimes become more complex, we also face new challenges that remind us how important it is to have strong protections and fair procedures in place. AI holds great promise to improve justice for many, but we must move forward thoughtfully, ensuring technology serves people and upholds fairness every step of the way. The way Artificial Intelligence (AI) is being used to document evidence is reshaping international criminal investigations in profound ways. It brings new levels of speed, precision, and trustworthiness to how evidence is gathered and handled, which is vital as crimes involving digital technologies become more complex.[1] But alongside these benefits, AI also introduces challenges that call for careful protections and thoughtful rules to make sure justice is served fairly. This shift is not entirely new using videos and photographs as evidence has a long history, reaching back to the Nuremberg Trials after World War II, where footage played a crucial role in helping judges understand the severity of what happened. Since then, advances in technology especially in forensic medicine and the detailed study of data have steadily increased the importance of such evidence. Today, international courts like the ICC continue this tradition, relying more and more on cutting-edge tools to uncover the truth and hold perpetrators accountable.

### 2.1.HISTORICAL EVOLUTION OF VISUAL AND DIGITAL EVIDENCE IN INTERNATIONAL CRIMINAL LAW

The use of videos and photographs as evidence in international courts is not something new it has a history that reaches back to the monumental Nuremberg Trials after World War II. At those trials, powerful film footage and photographs showing the horrific devastation and atrocities were presented to the judges. These visual records didn't just support witness testimonies; they brought the unimaginable reality of mass suffering and cruelty into the courtroom in a deeply

[1] Marco Roscini, "Digital Evidence and International Criminal Law", 29 LJIL (2016), p. 765.

moving and undeniable way. This was a landmark moment, showing how visual evidence can speak truths that words alone might fail to capture. It helped the world grasp the full scale and horror of the crimes committed.[2]

Since then, technology has advanced tremendously, allowing investigators today to collect, preserve, and verify evidence in ways that were unimaginable back then. Breakthroughs in forensic science, digital imaging, and data analysis have transformed the landscape of international criminal law. Courts like the International Criminal Court (ICC) and other tribunals increasingly rely on these advanced tools like satellite images, metadata, and open-source intelligence to piece together the truth. These tools not only strengthen the case by revealing patterns of violence and linking criminals to their actions, but they also make accountability more achievable. As technology keeps evolving, these digital methods are becoming essential pillars in the ongoing quest for justice, helping to ensure that no crime remains hidden or unpunished.

This journey from Nuremberg's early films to today's cutting-edge digital evidence reminds us how vital it is to harness technology not just for efficiency, but for the dignity of victims and the pursuit of lasting justice.

**2.2.THE GROWING ROLE OF DIGITAL TOOLS IN INTERNATIONAL CRIMINAL PROCEEDINGS**

Prosecuting international crimes is an incredibly complex task, largely because these offenses are not isolated events but part of wider, organized campaigns involving many individuals working together. Crimes like genocide, war crimes, and crimes against humanity often unfold through coordinated efforts with clear hierarchies and intent, making it essential for investigators to gather evidence that reveals these patterns and structures. Thanks to advances in technology, prosecutors now have powerful tools at their disposal such as satellite images, intercepted communications, and open-source intelligence that help document and verify events as they happen. These digital tools offer crucial details that support witness testimonies and expose

[2] Chiara Ragni, "Digital Evidence in International Criminal Proceedings and Human Rights Challenges", 97 QIL
(2023), p. 1.

large-scale operations that might otherwise go unnoticed, bringing a level of clarity and precision to investigations that was previously unimaginable.

Past cases before international tribunals highlight just how important such technologies have become. For example, the International Criminal Tribunal for the former Yugoslavia used satellite imagery to confirm mass grave sites and trace troop movements during the Bosnian War, reinforcing the understanding of coordinated attacks. Similarly, the International Criminal Court has relied on aerial photographs and geospatial data in key cases like Darfur and Al Mahdi to rebuild timelines and confirm evidence. Beyond war crimes, these technologies have proven invaluable in tackling terrorism and corruption, where digital footprints like call records and leaked documents provide new leads. While

these tools greatly improve the depth and accuracy of evidence, the courts continually face the challenge of ensuring their reliability and proper use, calling for clear and careful rules on how digital evidence should be handled in international justice.

This evolving landscape reminds us that as technology changes the way justice is pursued, careful balance and rigorous standards are needed to ensure that every piece of evidence contributes to fair and trustworthy outcomes.

**2.3.ARTIFICIAL INTELLIGANCE AND EVIDENCE DOCUMENTATION**

Artificial Intelligence (AI) is transforming the way international criminal investigations are conducted, bringing a new level of precision and efficiency to the collection, analysis, and preservation of evidence. AI-powered tools can sift through enormous amounts of data from social media posts and satellite images to intercepted communications and public records helping investigators uncover hidden patterns and connections that might otherwise be missed. By automating the early stages of sorting and organizing evidence, AI allows investigators to focus their energy on the most meaningful information, which is especially valuable in cases where the sheer volume of data can be overwhelming.

Beyond helping gather evidence, AI also plays a crucial role in ensuring that digital materials are genuine and trustworthy. Sophisticated algorithms analyze the details behind files, checking metadata, digital signatures, and even the smallest signs of tampering in photos and videos, including expertly crafted "deepfakes." This technology is vital for protecting the integrity of evidence and ensuring that courts can have confidence in what they see, even as digital manipulation becomes ever more sophisticated.

AI's impact extends further by strengthening the chain of custody the formal record of how evidence is handled and preserved throughout the investigation and trial process. By using AI systems often combined with blockchain technology, every interaction with a piece of evidence is securely logged and protected against tampering.[3] This creates a transparent and unbreakable trail from collection to courtroom, helping to guarantee that what is presented in court is exactly what was originally obtained. In today's complex, digital, and international investigations, these AI-driven safeguards are essential to building trust and fairness in the pursuit of justice.

**2.4.AI INTERGARTION IN INTERNATIONAL CRIMINAL COURT**

The International Criminal Court (ICC) has increasingly embraced Artificial Intelligence (AI) technologies to strengthen its investigative and prosecutorial work, especially when dealing with complex digital evidence. The crimes under its watch are vast and complicated, making it impossible to rely solely on traditional methods to process the enormous amount of data involved. Recently, AI tools have become a vital part of the ICC's efforts. For example, during investigations into the Ukrainian conflict, AI has been used to analyze videos, images, and social media content created by everyday people, helping verify their authenticity and spot any attempts at digital tampering. In another case, the destruction of cultural heritage sites in Mali, digital platforms and satellite images, supported by AI, helped prove the deliberate nature of the damage. Additionally, the ICC's Office of the Prosecutor has developed OTPLink, a cutting-edge online platform that uses AI to organize and categorize evidence, making sure the most relevant information gets the attention it deserves and helping speed up the entire investigation process.[4]

The impact of integrating AI into the ICC's operations goes beyond just technical improvements. It means the Court can now handle vast and complicated information more quickly and accurately. AI not only helps keep data well-organized but also makes sure that evidence meets

[3] Zavrgnik, A., "Criminal Justice, Artificial Intelligence Systems, and Human Rights," ERA Forum 20(4) (2020), p. 570.
[4] Freeman, "Hacked and Leaked: Digital Open-Source Information and the ICC", 19 JICJ (2021), pp. 1–24.

the highest standards of trustworthiness and authenticity. Automated checks help reduce mistakes and human bias, while secure audit trails maintain transparency about how evidence is handled. This results in more efficient case preparation, allowing prosecutors and judges to focus on the heart of the legal issues rather than getting bogged down in manual data review. Ultimately, AI strengthens the ICC's mission, supporting fair and effective justice in an era where crimes often unfold in a complex digital landscape.

**2.5.FUNCTIONAL ADVANTAGES OF AI IN INTERNATIONAL CRIMINAL PROCEEDINGS**

The integration of Artificial Intelligence (AI) in international criminal investigations offers remarkable advantages at every step of handling evidence. Most notably, AI can process enormous amounts of digital data such as emails, financial records, and intercepted communications with a speed and scale no human could match. Consider the case of Prosecutor
v. Lubanga (ICC), where the prosecution worked through an overwhelming volume of communications and organizational files. Although AI wasn't used at the time, it's easy to see how automated data analysis could greatly speed up such reviews in the future, helping investigators focus on the most crucial information.

AI also shines in uncovering hidden patterns and revealing networks of criminal activity. For example, in the Prosecutor v. Ongwen (ICC) case, involving the Lord's Resistance Army, AI analytics can help map out complex command structures and show how individual actions linked to higher orders, reinforcing cases of command responsibility. This capability is especially useful in organized crimes, where demonstrating coordination and intent is key.

Moreover, AI enhances both accuracy and impartiality by reducing human biases in data interpretation. In the Ayyash et al. case before the Special Tribunal for Lebanon, call data records were vital in showing communication between suspects. AI could further refine such analyses by automatically spotting communication clusters and exposing inconsistencies, making the evidence more solid and defensible.

AI's ability to bring together data from multiple countries and formats is another game-changer. Cross-border crimes generate evidence scattered across jurisdictions, languages, and systems. AI can seamlessly integrate this diverse information, helping investigators create a clearer and more complete picture. The Al Mahdi case at the ICC, for example, involved satellite images, intercepted messages, and international reports AI could boost the speed and coherence of such multinational investigations.

Finally, AI contributes greatly to fairer and faster trials by automating the organization and summarization of vast volumes of digital evidence and witness statements. The Prosecutor v. Katanga (ICC) case, with its thousands of testimonies and documents, shows how AI could ease the workload helping legal teams focus on the most relevant details and reducing delays. Such efficiencies not only save time and resources but also support the vital principle of procedural fairness, ensuring justice moves forward without unnecessary hold-ups.

Together, these benefits demonstrate that AI is not just a technological upgrade; it's a powerful tool that enhances the effectiveness and fairness of global justice efforts in tackling some of the world's gravest

crimes.

**2.6.DIGITAL EVIDENCE IN PRACTICE: DARFUR CASE**

The conflict in Darfur, which began in 2003 after rebel groups accused the Sudanese government of political neglect and marginalization, quickly turned into one of the most devastating humanitarian crises of our time. The government, together with allied Janjaweed militias, launched a brutal campaign that led to mass killings, widespread sexual violence, and the forced displacement of millions of innocent civilians. These grave crimes fell under the jurisdiction of the International Criminal Court (ICC), which took on the difficult task of investigating these atrocities.

The ICC Prosecutor's investigation relied heavily on the groundbreaking work of the United Nations Commission of Inquiry on Darfur. This commission was among the first to make extensive use of satellite imagery and other digital forensic tools to document the immense scale of the human suffering and destruction. Human rights organizations played a key role in gathering and interpreting these satellite images, which revealed heartbreaking scenes of villages being systematically burnt to the ground, essential civilian infrastructure destroyed, and millions of people forced to flee their homes.

This pioneering use of remote-sensing technology not only provided powerful, undeniable visual evidence of widespread abuses but also set an important precedent for how digital and geospatial data could be accepted and trusted in international courts. The success of this approach has influenced the way the ICC and other tribunals handle evidence, offering a new way to hold perpetrators accountable when physical evidence or eyewitness testimony might be limited or dangerous to obtain.

**2.7.CONCLUSION**

Artificial Intelligence (AI) is more than just a technological innovation for international criminal investigations; it has become a critical lifeline in navigating the complexities of modern justice. The ICC faces monumental challenges as it works to uncover truths amid vast amounts of digital information spread across borders and languages. AI empowers investigators by swiftly analyzing mountains of data everything from social media posts to satellite imagery allowing them to spot patterns, verify facts, and prioritize key evidence that would be impossible to manage otherwise. For instance, during the ongoing conflict in Ukraine, AI tools help authenticate videos and images submitted by civilians, making sure manipulated footage doesn't cloud the search for truth. In the Mali case involving the destruction of cultural heritage, digital and satellite data extensively supported the prosecution's case, showing the devastating impact with clear, irrefutable evidence. Behind the scenes, platforms like the ICC's OTPLink apply AI to organize and categorize incoming data efficiently, enabling investigators to focus on what truly matters and prepare their cases more effectively.[5]

However, this promising progress comes with important responsibilities. The integration of AI into justice systems raises vital questions about fairness, transparency, and accountability. It's essential to ensure that these powerful tools do not replace human judgment but instead enhance it, working within safeguards that protect the rights of all parties involved. The ICC's journey with AI is a testament to the balance required embracing innovation while upholding the timeless principles of justice and due process, so technology becomes a force for truth, fairness, and healing in the face of some of humanity's darkest crimes

[5] Segate, R. V., "Cognitive Biases, Privacy Rights, and Digital Evidence in International Criminal Proceedings," 21 ICLR (2021), p. 1.

## CHAPTER III
## LEGAILITY OF AI AND DIGITAL EVIDENCE IN INTERNATIONAL CRIMINAL CASES

This chapter begins by outlining the hybrid evidentiary framework used by international tribunals, which carefully balances the need for flexibility with respect for core legal principles. This delves into how courts navigate the lack of strict procedural rules in the face of a growing influx of digital and AI-generated evidence. It emphasizes the vital role of judicial discretion in applying broadly accepted principles like relevance, probative value, and fairness to ensure evidence is appropriately evaluated This foundational exploration paves the way for deeper discussions on how judges assess evidence reliability, address the challenges of unlawfully obtained materials, and embrace technological innovations shaping today's international criminal proceedings. By grounding the conversation in these core evidentiary principles, the chapter provides a clear lens through which to understand the evolving practices and challenges of modern justice in a digital age.

### 3.1.THE HYBRID EVIDENTIARY FRAMEWORK IN INTERNATIONAL CRIMINAL LAW

The rules of evidence in international criminal law are born from a blend of common law and civil law traditions, creating a system that is both adaptable and grounded in core principles. International tribunals and hybrid courts don't follow a rigid, one-size-fits-all rulebook for admitting digital or AI-generated evidence. Instead, they apply broad principles such as relevance, probative value, and fairness, giving judges the flexibility to thoughtfully evaluate the strength and reliability of the evidence before them. This approach is crucial in an era where technology evolves rapidly and the evidence can be complex and multifaceted.

This flexible framework is reflected in actual procedural rules. For example, Rule 89(C) of the ICTY and ICTR empowers tribunals to accept any evidence they believe holds probative value, while Rule 89(D) allows exclusion of evidence when its potential to mislead or unfairly prejudice outweighs its value. Similarly, Article 69(4) of the Rome Statute gives the ICC the authority to balance the probative worth of evidence against the risk of unfair prejudice. These principles came to life in cases like Prosecutor v. Tadić at the ICTY, where the court stressed that what matters most is the reliability and relevance of evidence not just its formal classification. This landmark decision set a precedent for embracing technologically sourced evidence and continues to shape how tribunals integrate digital and AI-generated materials within the evolving framework of international justice.

In essence, these rules assure that emerging technologies can be harnessed to uncover truth and deliver justice, while protecting fair trial rights and ensuring careful judicial scrutiny.

### 3.2.FOUNDATIONAL PRINCIPLES OF ADMISSIBILTY: RELEVANCE, PROBABTIVE VALUE, FAIRNESS

When it comes to digital and AI-generated evidence, it's important that these modern tools still meet the classic standards of relevance, probative value, and fairness that have long guided the pursuit of justice. Evidence is considered relevant if it helps make a key fact more likely or less likely. For instance, communication logs, metadata, or surveillance data that reveal coordination between alleged perpetrators can directly support claims of command responsibility. The Lubanga case at the ICC highlights this principle well here, digital communications, reports from NGOs, and videos were carefully weighed not simply because they existed, but because they meaningfully contributed to proving who was responsible. Similarly, the case of Prosecutor v. Akayesu at the ICTR stressed that admissibility depends on how logically the evidence connects to the case facts, rather than the format or technology behind it.

Probative value means that evidence must do real work in establishing something important about the case, not just exist as a piece of information. In the Ayyash et al. case before the Special Tribunal for Lebanon, call data records played a vital role by showing how suspects were connected and coordinated, clearly supporting charges of conspiracy and participation. Legal evidence must clarify contested issues and strengthen the case in a substantive way, ensuring it helps build a fuller and more accurate picture of what happened.

Even when evidence is relevant and helpful, fairness remains key. International law, particularly Article 69(7) of the Rome Statute, requires courts to exclude evidence that was obtained through violations of fundamental rights if admitting it would damage the trial's integrity. This rule protects the essential balance between seeking truth and respecting due process, ensuring the rights of the accused are upheld while maintaining trust in the fairness and legitimacy of the judicial process. Ultimately, these standards guide tribunals in responsibly integrating new technological evidence without compromising on justice.Digital and AI-generated evidence must meet established standards of relevance, probative value, and fairness to be admissible in international criminal law. Evidence is relevant when it helps make a key fact more or less likely for example, communication logs or metadata showing coordination among perpetrators can support claims of command responsibility. In the ICC's Lubanga case, this principle was emphasized by assessing digital communications, NGO reports, and video evidence for their substantive contribution to establishing individual accountability. Similarly, the ICTR's Prosecutor v. Akayesu highlighted that the admissibility of evidence depends on a logical connection to the facts at issue, not merely on the form or method of presentation.

Probative value requires that evidence meaningfully advances proof of an element of the crime. For instance, in the Ayyash et al. case before the Special Tribunal for Lebanon, call data records were crucial in demonstrating coordination among defendants, thus possessing significant probative worth. Evidence must do more than exist; it must clarify disputed facts or corroborate other materials to directly aid the case.

Finally, tribunals must ensure fairness by considering the potential prejudicial impact of evidence. Article 69(7) of the Rome Statute mandates exclusion of evidence obtained in violation of internationally guaranteed rights if admitting it would seriously undermine the integrity of proceedings. This safeguard protects due process and the rights of the accused while preserving the legitimacy and credibility of judicial outcomes.

### 3.3.JUDICIAL DECISION AND EXCLUSION OF UNLAWFULLY OBTAINED EVIDENCE

Judicial discretion plays a crucial role in deciding whether to admit evidence that may have been obtained unlawfully or raises ethical concerns in international criminal trials. While Rule 95 of the ICTY and ICTR rules formally discourages the use of evidence gathered through methods that seriously compromise fairness or reliability, leading legal thinkers like Antonio Cassese
have clarified that such evidence is not automatically excluded. Rather, judges carefully weigh the evidence's value against the risk it might unfairly harm the accused or undermine the trial's integrity. This thoughtful, flexible approach ensures tribunals prioritize justice and fairness over rigid adherence to procedural technicalities.

For example, in the case of Prosecutor v. Brđanin (ICTY), the court excluded certain intercepted communications because of doubts about their legality and trustworthiness, underscoring the importance of fair proceedings over simply collecting more evidence. On the other hand, in Prosecutor v. Lubanga (ICC), evidence provided through cooperation with external organizations was allowed because it was

reliable and essential for uncovering the truth even though it didn't follow every traditional protocol. These contrasting decisions show how tribunals consider the full context, reliability, and impact of evidence, making careful choices on a case-by-case basis.

This balanced approach aligns with Articles 69(4) and 69(7) of the Rome Statute, which empower the ICC to admit evidence unless its prejudicial effect greatly outweighs its usefulness or if it violates fundamental human rights. In today's digital age, where much evidence involves complex technology and AI, this judicial flexibility is more important than ever. It allows courts to embrace technological advances while still protecting the fairness and integrity of the process. Ultimately, it is this judicial discretion grounded in legality, fairness, and careful assessment that forms the foundation for adapting international criminal justice to new challenges without compromising the core principles of due process.

### 3.4.BALANCING ADAPTABILITY AND FAIRNESS IN TECHNOLOGOICAL ERA

The fast pace at which digital technologies and AI-driven tools are emerging has challenged international criminal tribunals to rethink traditional rules around evidence. Courts now routinely encounter evidence produced through AI analytics, the extraction of metadata, satellite images, and archives of social media activity. This new landscape demands that judges look beyond sheer relevance and probative value, carefully examining the ways these tools collect and verify information. By balancing innovation with diligence, tribunals can ensure that technology helps reveal the truth without compromising the fairness and integrity of the process.

For instance, in the Prosecutor v. Al Mahdi case at the ICC, digital photos, geospatial data, and satellite imagery were crucial in confirming the deliberate destruction of cultural heritage sites in Timbuktu. Similarly, during the Darfur investigations, the courts accepted satellite images to substantiate the widespread burning of villages. These landmark cases show how tribunals can responsibly incorporate cutting-edge technology while upholding high standards for reliability, relevance, and authenticity.[6]

At the same time, courts remain deeply committed to protecting the rights of those accused. Safeguards like excluding evidence obtained illegally or evidence that could cause unfair prejudice preserve the fairness of proceedings and the legitimacy of outcomes. By embracing both adaptability and fairness, international criminal tribunals have crafted a model where AI and digital evidence can be used effectively to pursue justice without sacrificing the fundamental principles of due process. This balanced approach paves the way for future trials, where innovation and respect for legal safeguards walk hand in hand to meet the challenges of our digital age.

### 3.5.CONCLUSION

The admissibility of digital and AI-generated evidence in international criminal proceedings hinges on fundamental principles of relevance, probative value, and fairness, rather than rigid procedural definitions. Judges exercise careful discretion in assessing the reliability, context, and significance of such evidence, allowing tribunals to adapt to evolving technologies while maintaining essential procedural safeguards. Case law from institutions like the ICTY, ICTR, ICC, and STL demonstrates a consistent focus on the substantive contribution of evidence to establishing key elements of the crime and supporting accountability, regardless of the evidence's format or source. This balanced approach enables courts to integrate innovative tools like AI analytics, metadata, and satellite imagery without compromising fairness or due process.

At the core of this framework is the recognition that judicial discretion must carefully balance

technological innovation with the protection of trial integrity. Tribunals consider not only the evidentiary value but also potential prejudicial effects, excluding evidence obtained unlawfully

[6] Lindsay Freeman and Raquel Vazquez Llorente, "Prosecuting with Digital Evidence at the ICC: Opportunities and Challenges," 19 JICJ (2021), p. 1

or in violation of fundamental rights to safeguard fairness and legitimacy. This flexibility is crucial as international criminal justice wrestles with the complexities of digital and AI-based evidence, ensuring that progress in technology serves the pursuit of truth and justice without undermining the rights of the accused. By anchoring decisions in discretion, relevance, and fairness, these courts preserve the credibility of judicial processes and uphold the overarching goals of accountability and the rule of law in a rapidly changing digital era.

## CHAPTER IV CHALLENGES IN AI ASSISTED EVIDENCE

The growing use of digital and AI-assisted evidence in international criminal trials has transformed how investigations are conducted, offering powerful new tools but also raising complex legal, procedural, and technical challenges. Unlike traditional forms of evidence, digital materials such as emails, metadata, intercepted messages, satellite images, and AI-generated content are vulnerable to issues like tampering, loss, and complications stemming from different legal systems. This means tribunals must carefully consider questions of admissibility, reliability, privacy, and fairness to uphold justice without sacrificing procedural protections or human rights.

Adding to the complexity, international tribunals operate within hybrid legal frameworks that often lack clear rules on managing digital evidence. Judges are tasked with interpreting broad evidentiary principles, balancing the value of evidence against potential prejudice, and ensuring that materials are authentic and lawfully obtained. This chapter dives into the multifaceted challenges arising at the crossroads of technology, human rights, and judicial discretion, exploring how international criminal law must adapt responsibly to modern investigative realities.

### 4.1.LEGAL AND PROCEDURAL AMBIGUITIES

International tribunals function within hybrid legal frameworks that combine aspects of both civil and common law, resulting in a procedural setting that is flexible yet occasionally ambiguous. Unlike many domestic legal systems, tribunals such as the ICTY, ICTR, and ICC lack explicit statutory or procedural rules governing digital evidence. This gap entrusts judges with broad discretion to interpret general evidentiary principles, especially regarding the relevance, probative value, and fairness of evidence in each case.

This discretion also covers the conditional acceptance of evidence obtained unlawfully, as seen in interpretations of Rule 95. While this latitude permits tribunals to consider valuable evidence that might otherwise be excluded, it can sometimes lead to divergent results, particularly in hybrid courts where procedural expectations can vary depending on the judges' legal traditions. As a result, tribunals must skillfully balance the imperative of safeguarding procedural fairness with the practical need to utilize the evidentiary potential of digital materials effectively.

### 4.2.HUMAN RIGHTS AND PRIVACY CONCERNS

Digital evidence frequently intersects with important human rights considerations, presenting risks if improperly collected or used. In the Ayyash et al. case before the Special Tribunal for Lebanon, for

example, defense teams challenged the use of call data records transferred from Lebanese authorities to the UNIIIC, citing concerns about privacy and due process protections. Likewise, in the Ongwen case at the ICC, intercepted communications initially gathered for military or security reasons raised issues around selective disclosure and the impartiality of the proceedings.[7]

Tribunals face the difficult task of balancing the evidentiary value of digital materials with the potential infringement of fundamental rights. Ensuring that the use of such evidence does not undermine the fairness or legitimacy of the trial is paramount. Article 69(7) of the Rome Statute offers a crucial safeguard, permitting courts to exclude evidence obtained in violation of internationally guaranteed rights if its admission would compromise the integrity of the proceedings. This careful balancing act protects both the pursuit of justice and the procedural rights of the accused, reinforcing the legitimacy of international criminal justice.

**4.3.RELIBILTY AND AUTHENTICITY**

Digital evidence is particularly vulnerable to risks such as tampering, corruption, or loss, which makes proving its reliability and authenticity essential for it to be admitted in court. To establish this, evidence is typically accompanied by detailed logs, hash values, or forensic reports that confirm it has remained unaltered from the moment of collection through to its presentation in the courtroom. Metadata including timestamps, IP addresses, and file properties is often carefully examined as indicators that help verify the genuine nature of digital materials.

[7] Ayyash (STL, 2020); Ongwen (ICC, 2021); Al Faqi Al Mahdi (ICC, 2016).

Courts, such as the ICTY in the Prosecutor v. Limaj case, have underscored that proving authenticity is a fundamental first step before evaluating how much evidentiary weight the material carries. When authenticity cannot be established, evidence may be excluded or assigned less significance, highlighting the critical role rigorous forensic verification plays in preserving the integrity of digital evidence and ensuring a fair and reliable judicial process.

**4.4.CROSS JURISDICTIONAL ISSUES**

Digital evidence often involves coordination and transfer across national borders, which can give rise to conflicts between differing legal frameworks. For instance, common law countries generally offer broader investigative authorities, including interception warrants, while civil law nations tend to enforce stronger privacy protections. Additionally, digital evidence collected internationally is subject to complex rules under Mutual Legal Assistance Treaties (MLATs) and varied domestic data privacy laws, creating a challenging patchwork of regulations.

International criminal tribunals must carefully navigate these complexities to ensure that the collection, transfer, and use of digital evidence comply with both applicable domestic laws and international legal standards. Failure to adhere to these diverse requirements risks excluding critical evidence or triggering procedural disputes. Such challenges highlight the need for meticulous legal coordination and cooperation among jurisdictions to effectively manage transnational investigations and uphold the integrity of the judicial process.

**4.5.CONCLUSION**

The purpose behind collecting digital data greatly influences its admissibility and the fairness of its use as evidence. When data is originally gathered for intelligence or security reasons rather than for prosecution, there is a risk that it may be incomplete, biased, or selectively focused to support particular

narratives. For example, in the Ongwen case at the ICC, intercepted communications were not initially collected with judicial proceedings in mind, which raised legitimate concerns about the impartiality and comprehensiveness of the evidence. Tribunals must therefore assess whether the collection methods respect fair trial guarantees, such as those enshrined in Article 14 of the ICCPR and Article 69 of the Rome Statute, to ensure evidence is obtained and presented in a way that protects the accused's rights while maintaining the integrity of the judicial process.

Moreover, even when digital evidence is relevant and reliable, tribunals must carefully weigh its potential for prejudice. Sensitive information can unduly influence judges, disclose private details unnecessarily, or put witnesses at risk. According to ICTY/ICTR Rule 89(D) and ICC Article 69(4), courts are required to balance the probative value of evidence against the risk of unfair prejudice when deciding on admissibility. This subjective balancing introduces some unpredictability in judicial decisions, especially in cases involving large amounts of digital data. As a result, tribunals must exercise thoughtful discretion to ensure that the use of digital evidence aids the pursuit of truth without sacrificing procedural fairness, human rights, or the overall legitimacy of the justice system.

## CHAPTER V
## EMERGING TRENDS IN AI IN INTRENATIONAL CRIMINAL EVIDENCE GATHERING

Artificial Intelligence (AI) is rapidly reshaping how evidence is gathered, analyzed, and authenticated in international criminal investigations. Beyond its current uses, AI promises to revolutionize investigative approaches through predictive analytics, automated detection of patterns, and the integration of diverse digital data sources. These advancements hold great potential to improve the efficiency, accuracy, and depth of prosecutions for complex crimes such as genocide, war crimes, and crimes against humanity.

Yet, as AI becomes more deeply embedded in investigations, it raises significant legal, ethical, and procedural challenges. Concerns around algorithm transparency, bias, cybersecurity, compliance across borders, and protection of human rights must be carefully addressed to ensure AI enhances investigative capacity without compromising fairness or legitimacy. This chapter explores these emerging trends and looks ahead to future developments examining innovations like blockchain integration, geospatial analytics, and the need for standardized protocols and ethical oversight. By weighing opportunities alongside challenges, it aims to guide the responsible and effective use of AI in the evidentiary processes of international criminal tribunals.

Artificial Intelligence (AI) is rapidly revolutionizing the ways evidence is collected, analyzed, and verified in international criminal investigations. Beyond its current practical uses, AI holds the promise to transform investigative strategies by enabling predictive analytics, automated pattern recognition, and seamless integration of varied digital datasets. These advances can dramatically boost the efficiency, accuracy, and depth of prosecuting complex crimes like genocide, war crimes, and crimes against humanity, bringing hope for more comprehensive justice.[8]

[8] R. J. Hamilton and J. Nicholls, "New Technologies in International Criminal Investigations," 51 CWRJIL (2018), p. 1.

However, alongside these exciting possibilities come important legal, ethical, and procedural questions that demand careful attention. Issues such as the transparency of AI algorithms, the risk of bias, cybersecurity challenges, cross-border compliance, and adherence to human rights standards require

thoughtful management. The chapter explores emerging trends and future directions for ethically and effectively incorporating AI into evidence-gathering in international criminal law. Through examination of innovations like blockchain, geospatial analytics, and protocols for oversight, it aims to offer a balanced roadmap one that ensures technology strengthens the pursuit of truth without compromising fairness or legitimacy.

### 5.1.AI-ASSISTED INVESTIGATION AND PREDICTIVE JUSTICE

AI technologies are playing an increasingly important role in international criminal investigations, supporting efforts to predict criminal behavior and boosting the efficiency of prosecutions. By sifting through massive amounts of data including communications, financial records, social media posts, and geospatial information AI can uncover hidden patterns, map the networks of suspects, and reveal connections that might otherwise be missed. These insights help prosecutors focus on the most promising leads, allocate investigative resources wisely, and build a clearer, more detailed picture of complex criminal schemes.

However, the rise of predictive AI also brings serious ethical and legal challenges. Concerns such as algorithmic bias, the opacity of decision-making processes, and risks to the right to a fair trial must be carefully addressed. International tribunals have a responsibility to provide strong judicial oversight, ensuring that AI analyses are subject to human review, validated methods, and procedural protections. With proper regulation and vigilant monitoring, AI can serve as a powerful addition to the pursuit of justice augmenting human judgment rather than undermining the fairness and integrity of legal proceedings. The admissibility of digital and AI-generated evidence in international criminal proceedings hinges on fundamental principles of relevance, probative value, and fairness, rather than rigid procedural rules. Judges carefully assess the reliability, context, and significance of such evidence, allowing tribunals to adapt to evolving technologies while preserving procedural safeguards. Jurisprudence from the ICTY, ICTR, ICC, and STL underscores a focus on substantive impact over mere format, enabling courts to incorporate AI analytics, metadata, and satellite imagery without compromising due process.

This approach reflects a careful balance between innovation and integrity, as judicial discretion weighs evidentiary value against potential prejudice and respects fairness. By grounding admissibility in these principles, international criminal law remains responsive to technological advancements while safeguarding the rights of the accused, ensuring justice is both effective and credible in the digital age.

### 5.2.INTEGARTION WITH ADVANCED TECHNOLOGIES

AI's effectiveness is greatly enhanced when combined with other cutting-edge technologies. For example, blockchain provides a robust way to secure digital evidence by guaranteeing its immutability, recording verifiable timestamps, and maintaining a reliable chain of custody that tracks every interaction with the evidence. Similarly, AI tools that analyze satellite imagery, Internet of Things (IoT) data, and geospatial information play a key role in validating evidence from conflict zones or other remote locations, thereby improving the accuracy and reliability of investigative findings.

Furthermore, pairing AI with big data analytics empowers international tribunals to handle and interpret diverse data sets that come from multiple jurisdictions a long-standing challenge in international criminal law. This synergy enables courts to navigate the complexity of transnational evidence collection, making investigations more efficient, accurate, and comprehensive. It equips tribunals to piece together complex, multifaceted narratives of criminal activity while upholding strict procedural standards, ultimately strengthening both the truth-seeking mission and the integrity of judicial processes.

### 5.3.LEGAL STANDARIZATION AND PROCEDURAL REFORMS

At present, international tribunals lack uniform guidelines for the admissibility and evaluation of AI-generated evidence, leading to procedural inconsistencies and challenges related to reliability, fairness, and transparency. This gap has prompted scholars and legal practitioners to call for the development of formal protocols that would set clear standards for the responsible use of AI in legal proceedings. Such guidelines would include essential requirements such as human oversight over AI processes, full disclosure of the methodologies employed, and rigorous validation of AI outputs to ensure their accuracy and trustworthiness.

Implementing standardized procedures would foster consistency across tribunals, minimize disputes surrounding the admissibility of AI-assisted evidence, and strengthen confidence in its judicial application. Moreover, clear frameworks would enhance transparency and accountability, reassuring all parties that technological advances are harnessed ethically and effectively to support, rather than undermine, the quest for justice in the international legal arena.

### 5.4.JUDICIAL CAPACITY AND TECHNICAL EXPERTISE

The complexity of AI-generated evidence means that judges, prosecutors, and defense lawyers need to build a solid understanding of how AI works its strengths, its limitations, and where errors might arise. To meet this challenge, tribunals may bring in forensic AI experts, develop specialized training programs, and create interdisciplinary teams that blend legal knowledge with technical and ethical expertise.

By strengthening the skills and knowledge of those involved in the justice process, tribunals can ensure AI tools are used wisely and fairly. This expertise is especially important when dealing with complicated algorithmic analyses, encrypted information, or predictive data that directly influence prosecutorial decisions and trial management. Ultimately, equipping legal professionals with this understanding helps maintain trust and transparency, making sure AI enhances rather than hinders the pursuit of justice.

### 5.5.CONCLUSION

The future of AI in international criminal law envisions a partnership between advanced technology and human expertise a hybrid investigative model where AI supports but does not replace human judgment. AI can significantly enhance evidence gathering, help identify complex patterns, and streamline case management, making it possible for tribunals to handle vast and intricate data more efficiently and accurately than ever before.

To realize this potential, it is essential to establish strong legal frameworks, uphold human rights, enforce ethical review, and cultivate judicial expertise. When these elements work together, tribunals can harness AI's power to reinforce justice, increase transparency, and preserve the credibility of international criminal proceedings. In this way, AI becomes a vital ally in the administration of justice one that aids decision-making without overriding the human responsibility at the heart of the legal process.

## CHAPTER VI CONCLUSION AND SUGGESTIONS

### 6.1.SUGGESTIONS

Artificial Intelligence (AI) is rapidly transforming international criminal investigations by revolutionizing how evidence is collected, analyzed, and verified. The integration of AI promises to enhance investigative efficiency and accuracy, particularly in prosecuting complex crimes such as

genocide, war crimes, and crimes against humanity. AI's capability to process massive datasets from communications and financial transactions to satellite imagery and social media enables tribunals to uncover previously hidden patterns and connections, streamline case management, and prioritize investigative leads. This technological evolution holds great potential to improve the depth, transparency, and comprehensiveness of international prosecutions, fostering greater accountability for grave offenses.

To fully realize the potential of Artificial Intelligence (AI) in international criminal investigations while mitigating associated risks, several strategic measures are recommended:

1. Legal and Procedural Standardization: Tribunals should develop clear and consistent guidelines governing the admissibility, evaluation, and use of AI-generated evidence. This includes establishing formal protocols on transparency, methodological validation, and human oversight to ensure that AI tools are applied fairly and consistently across different jurisdictions.
2. Technical Expertise and Capacity Building: Judicial officers, prosecutors, and defense counsel should be equipped with adequate technical knowledge or have access to AI experts. Specialized training programs, interdisciplinary advisory panels, and expert consultations can enable tribunals to critically assess AI outputs, detect algorithmic biases, and evaluate the reliability and probative value of complex digital evidence.
3. Ethical Oversight and Human Rights Safeguards: Robust ethical frameworks must guide the deployment of AI in international criminal proceedings. This includes independent audits, bias mitigation strategies, and strict adherence to privacy and fair trial protections. AI should enhance the administration of justice without compromising fundamental human rights or procedural fairness.
4. Integration with Advanced Technologies: AI should be complemented by other technological tools such as blockchain, geospatial analytics, and secure cloud platforms. These innovations can strengthen evidence integrity, maintain a verifiable chain of custody, and support comprehensive mapping of criminal networks, particularly in transnational investigations.
5. Ongoing Evaluation and Adaptation: Tribunals must continuously monitor AI applications, update protocols, and adapt to emerging technological developments. This ensures that AI remains a supportive tool for investigation and adjudication, rather than creating procedural uncertainty or undermining fairness.

In summary, the transformative potential of AI in international criminal law can only be realized through a holistic strategy that integrates legal standardization, capacity building, ethical oversight, technological synergy, continuous adaptation, and international cooperation. Establishing rigorous, transparent protocols for AI use in evidence handling will address inconsistencies and enhance procedural legitimacy. Developing expertise and interdisciplinary support will enable tribunals to harness AI responsibly, turning sophisticated data into actionable, trustworthy insights. Embedding human rights protections and ethical safeguards will mitigate risks and maintain fairness. Combining AI with complementary technologies will strengthen investigatory rigor and evidentiary certainty. Sustained evaluation will preserve adaptability and integrity amidst technological evolution. Finally, fostering cooperation across jurisdictions and maintaining human judicial control will secure the legitimacy and effectiveness of justice in this new era. By embracing these multifaceted recommendations, international criminal tribunals can ensure that AI-assisted evidence gathering and analysis serve the grand objectives of accountability, transparency, and fairness. This comprehensive approach enables tribunals to meet contemporary challenges confidently while honoring the core legal and ethical principles that define international criminal justice. In doing so, AI will become a powerful ally in the ongoing quest to reveal

truth and secure justice for some of the gravest crimes facing humanity.

## 6.2.CONCLUSION

The integration of Artificial Intelligence (AI) into international criminal investigations marks a profound innovation in how evidence is collected, analyzed, and utilized. AI tools ranging from predictive analytics and pattern recognition to natural language processing and geospatial data integration—allow tribunals to systematically sift through massive, diverse datasets. This technology helps uncover hidden connections between perpetrators, victims, and events, enabling investigators to prioritize leads that might otherwise be overlooked. By transforming scattered digital information into coherent narratives, AI streamlines the often onerous process of case preparation and strengthens the ability of tribunals to deliver timely, transparent, and fair justice.

However, alongside these advantages come substantial legal, procedural, and ethical challenges that require careful navigation. International criminal tribunals operate under hybrid frameworks, blending civil and common law traditions, yet lack explicit guidelines tailored for AI-generated evidence. This creates uncertainty and variability in judicial decisions, as judges must exercise significant discretion within existing principles such as relevance, probative value, and fairness. The complexity of AI algorithms further complicates judicial evaluation, given the black-box nature of many AI tools that are difficult for legal professionals to fully interpret. In this context, maintaining human rights protections is paramount; digital evidence collection must respect privacy, fair trial rights, and due process, as underscored by cases like Ayyash (STL) and Ongwen (ICC). Tribunals face the ongoing task of balancing the strong evidentiary value of AI-assisted materials against potential risks of bias, prejudice, or rights infringements through ethical oversight, robust procedures, and careful judicial scrutiny.

Technical challenges also abound, particularly related to reliability, authenticity, and cross-border legal compliance. Digital evidence is susceptible to tampering, loss, and corruption, making it essential to uphold secure chains of custody and verify metadata accurately. Differences in jurisdictional requirements regarding privacy laws and surveillance complicate the lawful transfer and use of AI-derived evidence. Promisingly, emerging technologies like blockchain offer solutions that enhance auditability and immutability of evidence records, while AI-driven geospatial analytics strengthen the corroboration of satellite imagery and remote sensing data. These innovations support comprehensive investigative efforts and help tribunals verify the integrity and provenance of complex digital materials.

In sum, AI's transformative impact on international criminal law hinges on balancing innovation with principled safeguards. By establishing standardized legal protocols, building technical capacity, enforcing ethical frameworks, and leveraging complementary technologies, tribunals can responsibly harness AI's power to improve justice outcomes. This balanced approach not only enhances efficiency and accuracy but also ensures fairness, transparency, and respect for human rights remain at the heart of international criminal adjudication.

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