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The AI-shift: how Europol is leveraging artificial intelligence to combat serious organised crime and terrorism

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Abstract

Aim: The aim of this article is to highlight the importance of leveraging Artificial Intelligence (AI) in law enforcement to combat serious organised crime and terrorism, while ensuring responsible and accountable use of AI tools through collaboration and knowledge-sharing among European law enforcement agencies.
Methodology: The study uses a descriptive methodology to describe the development and cooperation process through which the Innovation Lab contributes to the innovation development and knowledge sharing of Europol and its member countries.
Findings: With the increasing volume and speed of investigative data, AI has emerged as a promising solution to help law enforcement agencies process and analyse large and complex datasets. Europol has been at the forefront of developing and sharing AI tools with its Member States, ensuring their responsible and accountable use. The integration of Artificial Intelligence (AI) in law enforcement investigations has been found to significantly enhance the efficiency and effectiveness of crime fighting, particularly in processing and analysing large and complex datasets.
Value: The article highlights the importance of collaboration and knowledge-sharing among law enforcement agencies to keep pace with AI advancements and prevent criminal abuse of these technologies.

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Since Hungary joined the European Union and became part of Europol 20 years ago, there have been significant advancements in combating serious organised crime and terrorism. These developments have been largely driven by increasing technological progress and proliferation, presenting law enforcement with an unprecedented amount of digital information to process and introducing entirely new challenges. As a result, law enforcement agencies (LEAs) across the EU find themselves needing to adapt their traditional ways of working and develop new methods to remain effective.

Artificial Intelligence (AI) has emerged as one of the most promising solutions to these challenges, offering exceptional performance enhancements. Advances in AI demonstrate that powerful technology is available to help meet the growing volume and speed of investigative data. While the last 20 years have seen vast progress in collaboration between LEAs on investigations, the current technological developments call for a similar intensification of collaboration in developing relevant tools. It is essential for the police to ensure these tools are developed and used effectively and responsibly, adapting to the rapid technological development and the evolution of new working methods and regulations.

In the two decades during which Europol has facilitated the exchange of information and joint investigations with Hungary, changes in the operational landscape have been reflected at Europol, too, in an effort to continuously improve the support the Agency can provide to its Member States. This has led to the establishment of dedicated centres for specific crime areas, but also the development and integration of AI to leverage the benefits of technology in the face of increasingly complex operational challenges.

Recent operational successes involving the dismantling of encrypted communications solutions used by criminals demonstrate this evolution, and illustrate the role AI has played in it. The vast amount of data obtained by law enforcement agencies in these investigations provided unprecedented insights into the business conducted by criminals. At the same time, the wealth of potential electronic evidence represented an overwhelming amount of data, vastly great than what was dealt with before. As a result, analysts faced the monumental task of processing millions of data points in order to link the relevant people and events in the context of criminal investigations. Moreover, some information contained in these large and complex datasets would relate to high profile cases, such as where there is an imminent threat to life, requiring urgent prioritisation and action.

To address this challenge, Europol makes use of AI to assist in these types of investigations by processing and analysing these large and complex datasets. Supported by in-house data scientists, Europol's analysts use AI models to automatically tag millions of images and extract key information from text, such as names, locations, phone numbers, and bank account details. Other models are designed to search for specific markers in images, like logos on cocaine bricks or identifying details on a shipment container's door or an employee badge.

With the preliminary AI analysis complete, analysts can verify the results and initiate the search for leads, having saved thousands of hours of potential work looking at messages and images individually. The search for leads might involve correlating images of cocaine with associated text messages detailing container numbers and locations in ports known for drug trafficking. Analysts can refine their searches, cross-reference findings with other Europol databases, and start mapping out connections between different suspects and their activities.

While AI greatly aids in the initial heavy lifting of classifying images and extracting data—tasks that are laborious and time-intensive—it is the human analysts, with their expert knowledge, who make the critical decisions. The ultimate goal is not just to make data AI-ready but to enhance the efficiency of investigations by integrating AI-based tools, thereby allowing analysts to focus their expertise where it is most needed.

The examples described above demonstrate why the integration of AI solutions into law enforcement practices is now essential. Developing and adopting AI tools presents significant challenges, prompting Europol to actively facilitate the sharing of tools and experiences with and between its member states. This collaboration is supported through the Europol Clearing Board for Innovation (EuCB) and the Europol Innovation Lab, which foster joint projects between Europol and national agencies to develop new tools. These collaborative efforts leverage the limited resources of European law enforcement by pooling skills and experiences, thus enhancing the capabilities of individual Member State agencies by providing them access to tools they might not have the resources to develop on their own.

The exchange of these tools is streamlined via the Europol Tools Repository, which supports the sharing of innovative solutions among Europol and the Member States. This repository allows law enforcement officers to share the tools they develop, offering their colleagues in other agencies a competitive advantage and a foundation for further development. Such sharing of innovation is crucial for law enforcement to keep pace with the rapid advancements in AI technology, ensuring they remain effective in their operations.

While AI undoubtedly offers numerous benefits to law enforcement investigations, a number of challenges need to be addressed in order to ensure they are used not just effectively, but also responsibly. One of these relates to interpreting increasingly multidimensional results that are not straightforward. Understanding these results requires a deep knowledge of both the capabilities and limitations of AI technologies. For instance, a top-ranking match in an AI search does not necessarily indicate that it is the exact person or object in the reference image; it is simply the closest match found within the available dataset. This insight is crucial as the quality of reference images may vary, and the best match does not confirm the presence of the specific person or object sought.

Recognising these limitations underscores the importance of having human experts verify and interpret the outputs of AI models. This human oversight is critical for ensuring the accuracy of decisions in law enforcement, addressing potential errors and biases inherent in AI models and their training data.

To ensure responsible and effective use of AI, law enforcement agencies must equip their investigators with appropriate training and develop robust practices for managing AI results. Establishing correct procedures can prevent misinterpretations and ensure the responsible use of AI, maintaining the public's trust in law enforcement's use of such technology.

Supporting these initiatives, Europol, in collaboration with the Centre of Excellence in Terrorism, Resilience, Intelligence and Organised Crime Research (CENTRIC) and key stakeholders from the EU Innovation Hub for Internal Security, launched the Accountability Principles for Artificial Intelligence (AP4AI) project. This project has resulted in a comprehensive framework aimed at promoting accountability in the use of AI within law enforcement and other public security actors, thereby ensuring that its deployment is both effective and trustworthy.

As AI becomes increasingly powerful and its impact on society grows, regulating its use has emerged as a crucial challenge. While this is vital and welcome for ensuring that AI can be a force for good, it simultaneously poses significant complexities for law enforcement. The EU AI Act[1] (AIA) is an important legislative effort in this regard, establishing ethical boundaries and providing a regulatory framework based on risk assessments for AI solutions. The AIA has significant impact for the law enforcement community, as it aims at harmonising AI innovation within police forces with the safeguarding of fundamental rights

1 Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828.

and societal values. The AIA prioritizes accountability and transparency, fundamental to upholding democratic values, ensuring that power structures benefit the community and that institutions behave ethically to preserve public trust. In response, Europol and Member State law enforcement agencies are actively working together to assess the impact of this legislation on law enforcement, as well as to facilitate compliance processes.

To facilitate Member States' efforts to align their work with the new legal requirements, Europol is developing the Compliance Checker for AI (CC4AI), which builds on the AP4AI framework. This tool is designed to aid EU internal security practitioners in adhering to the EU AI Act's requirements, providing step-by-step guidance tailored for AI implementation in policing. The CC4AI will be made freely available to EU law enforcement and internal security agencies.

In parallel, Europol and EU law enforcement agencies are also focused on developing a comprehensive AI Strategy for European law enforcement. This strategy aims to consolidate insights from across Europe, forging a unified approach and creating a resource pool for AI usage that benefits all Member States. This collective effort is critical in harmonising effective and compliant AI practices across European law enforcement.

AI has become so advanced and, at the same time, widely accessible, that highly sophisticated models are accessible to almost anyone, regardless of their technical knowledge. Often quick to adopt new technology and find innovative ways to carry out their *modus operandi*, criminals, too, are increasingly aiming to exploit AI for their own illicit goals. As a result, criminal abuse of AI has skyrocketed. Given the novelty of these types of criminal abuse, law enforcement needs to make a concerted effort in order to keep pace with these developments. To help strengthen law enforcement preparedness, Europol has developed a foresight function to point to likely developments in criminal use of AI and other technologies.

For instance, many threats highlighted in Europol's reports on deep fakes in 2022 (URL1) are now becoming common place. Even more rapid adoption has been shown with the emergence of large language models, such as ChatGPT. As Europol predicted in its report on the impact of LLM's on law enforcement (URL2), criminals were quick to make use of these models as tools for criminal goals and to create illicit content. While most LLMs have some protections designed to prevent use for nefarious purposes, these guardrails can be circumvented or removed entirely when an (open-source) model is run locally. The proliferation of open-source large language models is providing the tool for criminals to do far more than they could ever dream of before. As such, LLMs can support or even enhance virtually all crime areas in Europol's mandate.

While the rapid rate of adoption of these technologies, and the emergence of proof of these threats becoming real, have surprised many in the law enforcement community, the accurate predictions made in the 2022 and 2023 reports show that it is possible to anticipate and prepare for such threats. By working closely together and by pooling the insights of the European law enforcement agencies, we can better prepare for future threats by anticipating these types of developments – and aim to address them before it is too late.

Over the past two decades, the deepening operational partnership between Europol and Hungary has coincided with rapid technological advances, resulting in a dynamic state of constant change in the law enforcement operating environment. Europol has evolved to meet these challenges, enhancing support to Member States' law enforcement agencies with a sharpened focus on AI. This collaborative effort in developing and sharing AI tools within the European law enforcement community is vital if we are to continue to combat serious organised crime and terrorism effectively. Alongside the increased use of these tools, there is a concerted effort to ensure their responsible and accountable use, aiming to preserve public trust and protect the rights and security of citizens.

To assist Hungary and other Member States in keeping pace with AI advancements, Europol is proactively assessing future threats and the potential opportunities presented by these technologies. Only by pooling their collective insights and efforts can European law enforcement agencies achieve preparedness to adapt to technological changes and maintain their effectiveness in crime-fighting. Europol is committed to supporting these efforts in order to fulfil our mission of making Europe safer.

Online links in the article

URL1: *Facing reality? Law enforcement and the challenge of deepfakes*. https://www.europol.europa.eu/publications-events/publications/facing-reality-law-enforcement-and-challenge-of-deepfakes

URL2: *ChatGPT – The impact of Large Language Models on Law Enforcement.* https://www.europol.europa.eu/publications-events/publications/chatgpt-impact-of-large-language-models-law-enforcement

Law and regulation

Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No

300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828

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