

Chatbots, Future Undercover Investigators in the Criminal Process in the Artificial Intelligence Era?

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ABSTRACT: Modern society is witnessing remarkable development in many areas due to the advancement of computer science and, in particular, Artificial Intelligence (AI). IA represents “the theory and development of computer systems capable of performing tasks that regularly require human intelligence, such as visual perception, speech recognition, decision-making, and multilingual translation”. Justice is also an area in which AI brings its contribution in different forms, depending on the legal framework of each state. International bodies are preoccupied that law enforcement agencies adapt to new ways of committing crimes with technological and transnational components and use appropriate means of investigation. Chatbots are intelligent conversational computer systems designed to mimic human conversation to enable automated online guidance and assistance. The increased benefits of chatbots have led to their widespread adoption by many industries to provide virtual customer support. Chatbots use methods and algorithms in two areas of artificial intelligence: Natural Language Processing and Machine Learning. Researchers have shown that chatbots can be used as real undercover agents. Thus, they may enter into a conversation with criminals willing to commit certain serious crimes without the latter knowing that they are in fact talking to an intelligent computer system, recording the conversation, the IP of the device used by the suspect and other data that may be stored on a computer system. The chatbot can have a human avatar, but not necessarily, and conversations can take place in a variety of ways: written, spoken, and so on. There is currently widespread discussion about the technological and ethical limitations of the use of AI in criminal justice, and the process of integrating mechanisms involving the use of AI into national law is difficult.

KEYWORDS: artificial intelligence, use of artificial intelligence in justice, chatbots, respect for fundamental human rights

1. Artificial Intelligence

1.1. Introduction

Modern society is witnessing remarkable development in many areas due to the advancement of computer science and, in particular, Artificial Intelligence (AI). As pointed in the literature, we are surrounded by information technology, living in an “infosphere” in which our lives are conditioned by digital devices, which “can be considered progressively artificial extensions of our limbs” (Caianiello 2021, 1). In everyday life “we see examples of high-quality artificial intelligence, including autonomous vehicles (such as drones and self-driving cars), medical diagnostics, art creation, games (such as chess or Go), search engines such as Google search), online assistants (such as Siri), photo image recognition, spam filtering, flight delay predictions, etc” (Cheng-Tek Tai, 2020).

One of the crucial challenges of social and economic development today is how states will be able to take advantage of and make proper use of AI and Machine Learning systems, and the European Union, inevitably aware of this, is committed to a digital agenda that seeks to explore all employment opportunities for AI while respecting citizens’ rights, as confirmed by the European Parliament’s recent establishment of the Special Commission on Artificial Intelligence in a digital age. “At both the state and intergovernmental, regional, interregional, European and international levels, there are a multitude of public or private initiatives that seek to define the principles and standards of AI development, medium and long-term development strategies, while there is an extremely serious concern for assessing the consequences of the widespread use of AI in all areas of social life” (Stănilă 2020, 278). We exemplify in this regard some events or bodies that had as a topic of interest the use of AI: G7 (The G7 Group (originally the G8) was

established in 1975 as an informal forum bringing together the leaders of the world's major industrialized nations. Over the years, the annual G7 summits have become a platform for setting the direction of multilateral discourse and policy responses to global challenges. The G7 complements the role of the G20, a group generally regarded as the framework for global economic coordination. The summit brings together leaders from Canada, France, Germany, Italy, Japan, the United Kingdom and the United States) meetings in 2016, 2018-2020, G20 (The group of twenty represents the association of the 19 most important industrialized and emerging countries: Argentina, Australia, Brazil, China, Germany, France, Great Britain, India, Indonesia, Italy, Japan, Canada, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the United States and the European Union. Their summits, which deal mainly with economic policy issues, are usually held annually), OECD (Organization for Economic Co-operation and Development), the European Union and its bodies, the United Nations, the International Organization for Standardization.

In its 2018 Work Program, the European Commission announced under the title “A connected Single Digital Market” its commitment to “seek to make the most of artificial intelligence,” which will play an increasing role in our economies and societies. In 2020, in its Work Program, the European Commission stated under the title “A Europe for the Digital Age” that it will present a “White Paper” on AI to support its development and implementation and ensure full respect for European values and fundamental rights, so as to maximize the gains from AI, while establishing a “reliable ecosystem to ensure that it develops within clearly defined ethical boundaries” (Artificial Intelligence and Law Enforcement - Impact on Fundamental Rights 2020).

Justice is also an area in which AI brings its contribution in different forms, depending on the legal framework of each state. In the United States, the use of AI seems to be very popular in the field of justice, both in civil and criminal cases. For example, Gina is the name of the online assistant who helps tens of thousands of people in Los Angeles High Court manage their traffic citations online. When visiting the traffic section of the court website, litigants can interact with Gina to pay a traffic fine, enroll in driving school, or schedule a court appearance. Gina is multilingual and can help court users in English, Armenian, Chinese, Korean, Spanish and Vietnamese.

In the field of justice, there are several directions in which AI provides support: advanced search engines for case law, online dispute resolution, assistance in drafting deeds, analysis (such as predictive), chatbots to inform litigants or assists them in legal proceedings, etc. It has been emphasized internationally that AI can be of considerable use in the field of law enforcement and criminal justice, with a growing trend in the use of automated processing techniques and algorithms in crime prevention and criminal justice systems. However, AI is generally perceived as, at least potentially, in tension with certain fundamental rights recognized as such in the EU and poses a particularly high risk for these rights when used in the field of law enforcement and criminal justice, which is why a series of papers by European Union and Council of Europe bodies have been developed to analyze the impact of AI on fundamental human rights.

Consequently, the European Commission for the Efficiency of Justice (CEPEJ) has drafted the “European Charter of Ethics for the Use of Artificial Intelligence in Judicial Systems and Their Environment” (www.coe.int). The five principles are: the principle of respect for fundamental rights, the principle of non-discrimination, the principle of quality and security, the principle of transparency, impartiality and fairness and the principle of user control.

1.2. Definitions of Artificial Intelligence

In the document entitled “White Paper. Artificial Intelligence - A European approach focused on excellence and trust” adopted by the European Commission (2020), referred to some definitions given to AI:

- “Artificial intelligence (AI) refers to systems that exhibit intelligent behavior by analyzing their environment and taking action - with some degree of autonomy - to achieve specific goals. AI-based systems can rely solely on software, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, voice and facial recognition systems), or AI can be embedded in hardware devices (e.g. for example, advanced robots, autonomous vehicles, drones or internet of things applications).”

- “Artificial intelligence (AI) systems are software (and possibly hardware) designed by humans that, if given a complex objective, act in the physical or digital dimension, perceiving the environment through data retrieval, interpreting structured data, or unstructured data collected, by reasoning about knowledge or by processing information obtained from such data and by deciding on the best course of action to be taken to achieve that objective. AI systems can use symbolic rules or learn a numerical model, and they can also adapt their behavior by analyzing how the environment is affected by their past actions.”

According to the English Oxford Dictionary, AI is “the theory and development of computer systems capable of performing tasks that regularly require human intelligence, such as visual perception, speech recognition, decision making, and multilingual translation” (Stănilă 2020, 35). Being a very dynamic field, the most rigorous efforts to define AI and provide an operational definition, taxonomies and related keywords emphasize the need to always do so in the context of a dynamic process, subject to regular review.

Domain AI is classified into General Artificial Intelligence (General AI) and Narrow Artificial Intelligence (Narrow AI). The first is a computer system that has intelligence equal to or even superior to human intelligence, which can generalize and abstract learning through various cognitive functions, such as humans, have strong associative memory and be able to judge, make decisions, could learn by reading or experience, could create concepts, perceive the world, invent and react to unexpected situations in complex environments and have the ability to anticipate.

Narrow AI is designed to solve predefined problems, such as identifying objects, setting a route, driving a car. Currently, all human achievements in the field of AI fall into this category. The key elements of AI are data, algorithms, and computing power.

1.3. The use of Artificial Intelligence in criminal justice

The study *Artificial Intelligence and Law Enforcement - Impact on Fundamental Rights* (2020) conducted under the auspices of the European Parliament found that AI in the field of law enforcement and criminal justice is already a reality, as AI systems are increasingly adopted or taken into account. Such systems could take many different forms and may occur at the intersection of various sustained trends to increase the use of data, algorithms and computing power. These developments are related to preexisting trends that have been generically categorized under other notions, such as “big data”.

It was noted that there are four issues regarding the usefulness of AI in criminal justice, which also involve some controversies regarding the observance of fundamental human rights: predictive policing (for example, algorithms calculate the degree of risk of recidivism or victimization, so that the activities of enforcement bodies of the law to be more focused on the respective subjects), facial recognition, AI and the act of justice, as well as AI and territorial borders.

Facial recognition technology allows you to automatically identify or authenticate a person by matching facial features in two or more digital images. In accordance with EU data protection law, even if the processing of photographs as such is not systematically considered as processing that implies special protection beyond the general rules of data protection, when the data are processed to allow such identification or authentication, these should be considered as biometric data and special protection is required. Facial recognition technologies have so far been implemented in public or semi-public spaces, both by public authorities and by private companies. In Spain, for example, facial recognition systems have recently been implemented in

some supermarkets, probably to automatically detect people who may be subject to a restraining order that prevents them from entering or approaching company staff. With regard to AI and the administration of criminal justice, this can be useful in the use of predictive tools by judges, such as the risk of recidivism.

Recidivism algorithms have attracted a lot of attention, especially in the USA. Many of the concerns about the use of algorithms for criminal justice purposes relate to indirect racial bias in models that predict crime and recidivism, for example through the use of non-neutral proxy variables. In *State v. Loomis*, the Wisconsin Supreme Court ruled that the use of risk prediction algorithms does not violate the defendant's right to a fair trial (even if the assessment methodology was not disclosed).

With regard to the protection of territorial borders, automated decision-making systems are becoming more widespread and may include systems that classify individuals (for example, as high risk or high priority), which generate scores, probability assessments and other indicators that support evaluation or investigations, which provide recommendations on applications or even make complete decisions (Artificial Intelligence and Law Enforcement - Impact on Fundamental Rights 2020, 29).

The initiatives taken by the Council of Europe to promote respect for fundamental human rights in the context of the use of AI are multiple, adopting a series of acts that support the development of guidelines on a common framework of standards to be respected when a court uses artificial intelligence.

Regarding criminal investigations, it should be noted that “criminal prosecution faces new times, which bring a lot of challenges: the professionalization of criminals, the criminal phenomenon, in addition to proliferating, acquires new features such as technology and transnational component or Internet as a means of committing these crimes. These challenges require investigators and other judicial bodies to adapt and be creative in their fight against crime. Artificial intelligence and all its applications could be the key to the successful application of criminal law, but the use of such new tools could put the criminal and procedural criminal law of states to difficult test” (Stănilă 2020, 208).

In the Council's Conclusions on combating the sexual abuse of children, adopted by the Council at its 3717th meeting held on 8 October 2019 (Council of the European Union 2019), it has been observed that in the field of child sexual abuse, criminals routinely operate across borders, using social networking platforms and electronic communications services, as well as peer-to-peer networks, bulletproof hosting, cyber lockers, dedicated forums in the dark web and other digital “safe havens” where offline child abuse is actively encouraged in order to produce new “high value” material and where crime is normalized. It has been highlighted that the prosecution of material manufacturers is an international priority, due to the seriousness of their crimes and the serious consequences they can cause. Criminals use encryption and other anonymization techniques to hide their identity and location. They use communication platforms hosted and administered in different countries to lure children into abuse and to force them to obtain abusive materials, as law enforcement is hampered by inconsistent techniques and various laws in different jurisdictions, especially in other countries. Third parties, are struggling to carry out investigations. The document also states that the fight against sexual abuse and sexual exploitation of children is often a fight against organized crime and trafficking in human beings.

In this context, and in line with the EU acquis, the Council reaffirmed the commitment of the EU and its Member States to protect the fundamental rights of children and the rights of victims of crime and the fight against sexual abuse and sexual exploitation of children, both offline and online, regardless of the child's physical location or nationality. Reducing the number of children who are victims of sexual abuse and increasing the proportion of successful investigations remain a key political and operational priority. At the same time, the Council called on the EU and its Member States to regularly evaluate the effectiveness of legislation on combating the sexual abuse and sexual exploitation of children in order to ensure that it is fit for

purpose. Given the current challenges of detecting crimes and prosecuting perpetrators, attention should be paid to the use of chatbots in the criminal investigation phase.

2. Use of chatbots in criminal investigations

2.1. Chatbots. General presentation

“Chatbots are intelligent conversational computer systems designed to mimic human conversation to enable automated online guidance and assistance. The increased benefits of chatbots have led to their widespread adoption by many industries to provide virtual customer support. Chatbots use methods and algorithms in two areas of artificial intelligence: Natural Language Processing and Machine Learning” (Caldarini, Jaf and McGarry 2022, 1).

The same paper mentions other names used in the literature for the same intelligent programs that we call chatbots: conversational system, conversational entities, conversational agents, embedded conversational agents, human-computer conversational systems.

A chatbot can process the user's input, which is text in natural language, and can produce an output, which should be the most relevant response to the sentence entered by the user. Chatbots are therefore an automatic dialogue system that can respond to thousands of potential users simultaneously. Chatbots are currently used in a variety of different fields and applications, from education to e-commerce, including healthcare and entertainment. Therefore, chatbots can provide both support in various areas and entertainment to users.

In another definition, it was shown that a “chatbot (chat + robot) is a computer program used to conduct an online “chat” or a text or text-to-speech conversation. Chatbots are sometimes referred to as intelligent robots, interactive agents, virtual assistants, or artificial conversation entities. Chatbots can be as simple as rudimentary simple-to-answer questions with a single line answer, or they can function as sophisticated digital assistants that use AI and machine learning to learn over time and deliver ever-increasing levels of personalization as it collects and processes information. Advances in AI and conversational algorithms have led many people to see chatbots as a relatively new technology. However, in 1950, Alan Turing originally raised the question, “Can a computer communicate in a way that is indistinguishable from a human?” in his article “Computing Machinery and Intelligence.” Inspired by Turing, Joseph Weizenbaum, while at MIT in the early 1960's, developed ELIZA, which is often considered the first chatbot. ELIZA, who simulated a psychotherapist, communicated with people by accepting text input and looking for answers by matching patterns and clever wording. Despite the extensive history of chatbots, recent advances in AI have created an exponential growth in industry” (Chatbots in the Criminal Justice System. An overview of chatbots and their underlying technologies and applications, 2021, 2)

Chatbots can be classified into different categories based on various criteria, such as the field of knowledge, the services they provide, the purpose of the chatbot, the method of processing the input and generating the response, and so on.

Depending on the knowledge that a chatbot can access or the amount of data that it has processed in the learning process, it can be open domain, which allows users to ask questions about any topic, and the chatbot respond appropriately (in this context they are also called conversational agents), or closed domain, designed for specific and limited purposes to provide limited answers that help users to perform certain tasks.

From the perspective of the close proximity between chatbots and users, the system can be interpersonal, designed to obtain information and transmit it to users (such as airline booking services or FAQs bots), intrapersonal, which has intended to be a companion of users in their private domains, such as Messenger, as well as interactive, which involves the use of two systems that communicate with each other to perform a task.

Depending on the purpose, chatbots may be informative, in the sense that they provide users with information that is stored in advance or available on a specific source, such as a web

page, conversational, in the sense that they are designed to communicate with users as a human being would do and responding appropriately to the input made to them (e.g. Siri and Alexa).

Compared to the input processing and output generation method, the systems are retrieval based on techniques such as keyword matching, Machine Learning (Machine Learning requires the programmer to show the algorithm a series of examples and a data label, and the system will figure out what these examples have in common. Machine Learning has been defined as “a field that deals with how to build computer programs that are automatically enriched based on their own experience” (Stănilă 2020, 40), Deep Learning (Deep Learning is a subcategory of Machine Learning, the first being structured in hierarchical layers; “Instead of manually extracting features from the data, the programmer can feed the data directly to the DL algorithm, which will automatically find the relevant features” (Stănilă 2020, 41)), to identify the most appropriate answer from a list of predefined answers, and generative based, which involve formulating a response based on input from the user. These chatbots use a combination of supervised learning, unsupervised learning, reinforced learning adversarial learning to train the chatbot.

It is undeniable that chatbots have the potential to expand access to justice (for example, by constantly assisting victims of crime to find out their accessible rights and legal remedies, to draft various acts), to increase community involvement, and to reduce costs by improving efficiency due to the ability to automatically process a huge amount of data and perform tasks.

2.2. The use of chatbots in criminal investigations as a futuristic method of detecting crime

As noted above, international bodies are solicitous that law enforcement agencies adapt to new ways of committing crimes with technological and transnational components and use appropriate means of investigation. “Reluctance for innovative tools and approaches and delaying the use of artificial intelligence algorithms could dramatically affect criminal investigation and allow criminals to escape criminal liability and evade the state repressive system” (Stănilă 2020, 187).

In search of futuristic methods and tools for detecting crime, several AI tools are currently being tested in the criminal investigation phase: chatbots, Big Data analysis through VoIP companies, specific software for managing evidence or stopping crime.

Researchers have shown that chatbots can be used as real undercover agents. Thus, they can enter into conversation with criminals willing to commit certain serious crimes without the latter knowing that they are in fact talking to an intelligent computer system, to record the conversation, the IP of the device used by the suspect and other data that may be stored on a computer system. The chatbot can have a human avatar, but not necessarily, and conversations can take place in a variety of ways: written, spoken, and so on.

In conversations between chatbots and suspects, criminal activities can be detected, such as child pornography, in which the chatbot could simulate a child on whom the suspect is sexually abusing, only the victim is not real, but virtual, as opposed to the potential suspect who is a real person. An example of a chatbot used in criminal investigations to detect suspects and victims is Sweetie, created by the international federation Terre des Hommes (www.terredeshommes.org) to combat online pedophilia.

“In its first version, the Sweetie 1.0 chatbot embodied a 10-year-old female from the Philippines and was used to identify and expose sex tourism amateurs. Since Sweetie was not automatic in its first version, the chatbot was operated on by a human agent. The conversations with the pedophiles were carried out by police officers, Sweetie being only their avatar. Despite its initial success, Sweetie's use was limited by the fact that he was operated on by a human actor, which led to a limited number of simultaneous online conversations. But the number of suspects - webcam sex amateurs - was over 2000 per hour! Under these conditions, the human resources of the police could not cope, so Sweetie 2.0, a more advanced version of the chatbot, was created.” (Stănilă 2020, 194)

Sweetie 2.0 is a semi-autonomous AI system that can engage in a relevant conversation with a suspect without being operated on by a human agent. Since its first use in 2013, Sweetie has contributed to the condemnation of several people, English, Danish, Dutch, Belgian, Australian people for online pedophilia (Terre des Hommes 2014).

Other initiatives include the development of a platform to assist law enforcement authorities in the early detection of terrorist activities, radicalization and recruitment, including through the infiltration of intelligent conversational entities on the Internet. (Artificial Intelligence and Law Enforcement - Impact on Fundamental Rights, 2020, 60)

There are plans for the future to create chatbots that are completely autonomous from the human agent, but this is still a controversial topic in the legal world and not only given the many legal issues that may arise, such as the legal possibility of conducting criminal investigation by a non-human agent, the possibility of prosecuting suspects when the victims are not real, but also of an ethical nature, given the algorithms with which chatbots are taught, being able to give rise to discussions such as discrimination.

In the Romanian criminal legislation, child pornography is punished even if the pornographic material only simulates, in a credible way, a minor with explicit sexual behavior so that the problem of the putative deed could not be raised (Art. 374 alin. 4 of Romanian Criminal Code).

Regarding the legal possibility to use in the criminal process the evidence obtained as a result of using a chatbot similar to the use of the undercover investigator, it should be noted that in the Romanian Code of Criminal Procedure are regulated in art. 130-153 special methods of surveillance or investigations, including access to a computer system and the use of undercover investigators and collaborators.

Following the interpretation of the above-mentioned legal provisions, it is noticeable that the Romanian criminal investigation bodies have no legal basis to use a chatbot in order to carry out a similar activity to the undercover agent as the law clearly stipulates that undercover agent are operative judicial police agents or other operative agents within the state bodies who carry out, according to the law, intelligence activities in order to ensure national security.

Access to a computer system, according to art. 138 para. 3 of the Romanian Code of Criminal Procedure means entering a computer system or other means of storing informational data either directly or remotely, through specialized programs or through a network, in order to identify evidence. It can be observed that this legal institution allows only the entry into a computer system, not the interaction with the suspect through a chatbot so that the data and evidence obtained as a result of such a communication can be subsequently used as evidence in criminal proceedings.

2.3. Reflections on the implementation of the method of criminal investigation of the use of chatbots

Although national authorities are encouraged at international level to take the necessary measures to prevent the fight against serious crime by methods adapted to contemporary technological reality, laws to be innovative and creative so that the above-mentioned goal can be achieved, technological and ethical limitations on the use of AI in criminal justice and the process of integrating the mechanisms that involve the use of AI in national legislation is difficult.

In the process of regulating the use of chatbots in the conduct of criminal investigations similarly to undercover investigators, similar safeguards should be provided, such as compliance with the principles of legality, necessity, proportionality and subsidiarity, as such activity may be deeply intrusive in private life.

All other standards imposed by the European Court of Human Rights on the use of undercover investigators must also be respected, including loyalty to the administration of evidence, which also involves the abstention of the investigating bodies from provoking people to commit crimes so as to obtain evidence in criminal proceedings.

Prior to the regulation and implementation of chatbots as a tool for crime prevention and detection, key issues related to the purpose of using AI systems, their management, their security, mode of operation, responsibility for use, monitoring, evaluation, systems auditing, ethical issues such as non-discrimination and transparency should be clarified.

We believe that criminal law should also be updated to criminalize offenses, so that criminals can be prosecuted for serious criminal offenses, even if the victims are virtual, and criminal behavior is detected as a result of using chatbots. The main element for prosecuting should be the dangerousness of the perpetrator, not necessarily the harmful consequences for a person. We can think of the crime of child trafficking, which can be committed even online through the method of recruiting a minor (in reality he is a virtual one) through corruption in order to exploit him later. In this case, the offender should be held liable for a committed offense.

We also consider that it would be appropriate to adapt the Romanian criminal law in the sense of sanctioning as crimes committed in the form of attempted crime in which the victim is virtual, although the perpetrator believed that this is a real one (in fact this is a chatbot) and in the case of other less serious offenses, but in respect of which the use of chatbots is permitted.

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