

Professional Fault Resulting from Artificial Intelligence Us In Police Work



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Abstract: Most comparative legal systems agree that fault is the basis of civil liability and its first pillar. The fault is defined as every wrongful act, whether it is positive in the performance of a certain act or negative in the failure to perform a legal duty, which leads to harm to others. The scope of this study was limited to highlighting the professional fault resulting from the use of artificial intelligence technologies in the work of police agencies and describing those techniques used to understand the Associated Professional fault images in the absence of a legislative regulation in the United Arab Emirates regulating the images of this fault. The study adopted the comparative analytical descriptive approach and reviewed a range of practical applications of artificial intelligence technologies in various areas of policing, such as big data analysis, facial recognition, and crime forecasting. The study concluded that using these techniques may lead to various professional faults, such as bias in data processing, or making wrong decisions based on inaccurate results. The study also showed the need to strengthen legal and ethical controls in using these technologies to ensure the improvement of their performance and reduce the professional faults associated with them, in addition to protecting the rights of individuals affected by decisions based on artificial intelligence technologies.

Key Words: Predictive Policing, Intelligent policing, Algorithmic bias, Civil liability.

Faute professionnelle résultant de l'intelligence artificielle utilisée dans le travail policier

Résumé: La plupart des systèmes juridiques comparés s'accordent à considérer que la faute constitue le fondement de la responsabilité civile et son premier pilier. La faute est définie comme tout acte illicite, qu'il soit positif par l'exécution d'un certain acte ou négatif par l'omission d'un devoir légal, et qui entraîne un préjudice pour autrui.

Cette étude s'est limitée à mettre en lumière la faute professionnelle résultant de l'utilisation des technologies d'intelligence artificielle dans le travail des services de

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police et à décrire ces techniques utilisées afin de mieux comprendre les formes de faute professionnelle associées, en l'absence d'une réglementation législative aux Émirats arabes unis encadrant ces fautes.

L'étude a adopté une approche analytique et comparative, en examinant diverses applications pratiques des technologies d'intelligence artificielle dans différents domaines du travail policier, tels que l'analyse des big data, la reconnaissance faciale et la prévision de la criminalité.

L'étude a conclu que l'utilisation de ces technologies peut entraîner diverses fautes professionnelles, comme des biais dans le traitement des données ou des décisions erronées fondées sur des résultats inexacts. Elle a également mis en évidence la nécessité de renforcer les contrôles juridiques et éthiques dans l'utilisation de ces technologies afin d'améliorer leur performance, de réduire les fautes professionnelles associées et de protéger les droits des individus affectés par des décisions basées sur l'intelligence artificielle.

Mots-clés: Police prédictive, Police intelligente, Biais algorithmique, Responsabilité civile.

ماهية الخطأ المهني الناتج عن استخدام تقنيات الذكاء الاصطناعي في عمل الشرطة

ملخص: تتفق أغلب النظم القانونية المقارنة على أن الخطأ يُعد أساس المسؤولية المدنية وركنها الأول. ويُعرّف الخطأ بأنه كل تصرف غير مشروع، سواء كان إيجابياً يتمثل في القيام بفعل معين أو سلبياً يتمثل في الامتناع عن أداء واجب قانوني، مما يؤدي إلى إلحاق الضرر بالغير. اقتصر نطاق هذه الدراسة إلى تسليط الضوء على الخطأ المهني الناتج عن استخدام تقنيات الذكاء الاصطناعي في عمل أجهزة الشرطة، وبيان وصف تلك التقنيات المستخدمة لفهم صور الخطأ المهني المرتبطة بها، في ظل غياب تنظيم تشريعي في دولة الإمارات العربية المتحدة ينظم صور هذا الخطأ. اعتمدت الدراسة المنهج الوصفي التحليلي المقارن، واستعرضت مجموعة من التطبيقات العملية لتقنيات الذكاء الاصطناعي في مجالات مختلفة من العمل الشرطي، مثل تحليل البيانات الضخمة، والتعرف على الوجه، والتنبؤ بالجريمة. وخلصت الدراسة إلى أن استخدام هذه التقنيات قد يؤدي إلى أخطاء مهنية متنوعة، مثل التحيز في معالجة البيانات، أو اتخاذ قرارات خاطئة بناءً على نتائج غير دقيقة. كما أظهرت الدراسة الحاجة إلى تعزيز الضوابط القانونية والأخلاقية في توظيف هذه التقنيات، بما يضمن تحسين أدائها وتقليل الأخطاء المهنية المرتبطة بها، إضافة إلى حماية حقوق الأفراد المتأثرين بقرارات تعتمد على تقنيات الذكاء الاصطناعي.

الكلمات المفتاحية: الشرطة التنبؤية، الشرطة الذكية، التحيز الخوارزمي، المسؤولية المدنية



Introduction:

Civil Liability in Law refers to an individual's duty to compensate another for harm caused. It rests on three key pillars: the first is a fault, which indicates an unlawful action taken by someone, either through an active deed or a failure to act. The second is damage, denoting the injury inflicted on a person's property, physical well-being, or emotional state. The third is causation, which establishes the relationship between the fault and the damage, where the fault must directly result in the harm.

The concept of fault refers to actions that violate legal or societal obligations. When a natural person commits a fault, recognizing and assigning responsibility is generally easy due to clear intentions and actions. However, complications arise with software, machines, or AI systems, where determining "fault" is intricate because these systems lack personal intent or will. This complexity deepens when damages stem from choices made independently by these systems, leading to uncertainty about accountability—whether it lies with the programmer, user, or manufacturer. These issues highlight the need for new legal frameworks that keep pace with swift technological progress.

Over the past twenty years, advancements in artificial intelligence research have led to the creation of sophisticated applications designed to enhance the efficiency of systems across various sectors, including healthcare, engineering, and security. As crime rates increase and criminal methods evolve, many nations are enhancing their security forces' capabilities with intelligent systems that show promise in crime prevention and bolstering national safety.

In developed nations, security agencies have begun using AI tools for crime detection and prediction, while developing countries are eager to learn from these practices. Nevertheless, deploying such technologies can introduce challenges, including risks of faults, potential misuse, and unclear legal frameworks concerning liability for any resulting damages.

The prevailing view of artificial intelligence tools remains limited to seeing them as tools that mimic natural human intelligence.¹ Despite the advantages offered by these technologies, they are marred by numerous legal gaps, especially as they continue to be vulnerable to hacking and technical malfunctions that can cause significant harm to humans. This topic sheds light on the professional faults of artificial intelligence technologies in policing through two requirements. The first explores the nature of

¹ Fayeq Awadain: "The Uses of Artificial Intelligence Technologies Between Legality and Illegitimacy - Part One: The Nature of Artificial Intelligence and the Fields of Its Security Applications," National Criminal Journal, Volume (65), Issue (1), March 2022, pp. 1-40, p. 8.



the artificial intelligence tools used in police work, while the second examines the forms of professional faults related to artificial intelligence in police.

The United Arab Emirates is among the first countries in the Middle East to integrate AI systems into its security forces. It employs cutting-edge technologies such as robots, smart vehicles, and advanced surveillance cameras. A federal law has been enacted to empower the Cabinet to oversee AI-related initiatives while establishing a legal framework to address the legal and ethical issues surrounding their implementation.

This research addresses the challenges linked to professional faults that arise from deploying artificial intelligence technologies within police agencies, particularly given the substantial increase in these technologies for data management and decision-making. It raises questions about the characteristics of these professional faults and their implications for police operations, as well as the adequacy of existing regulations to tackle these issues. The primary inquiry is: What professional faults emerge from implementing artificial intelligence technologies in police work? This leads to two additional questions:

- 1 .Which artificial intelligence technologies are most utilized by police agencies?
2. What types of professional faults are related to applying these technologies?

This research outlines the different artificial intelligence technologies employed by police agencies. It also recognizes and examines the types of professional faults that arise from these technologies and suggests measures to minimize them through enhanced legal and ethical regulations governing artificial intelligence technologies.

This research is significant for addressing a knowledge gap regarding the effects of artificial intelligence on police agency performance. It emphasizes the need to comprehend the professional risks tied to these technologies and approaches to mitigate them to enhance police efficacy and safeguard individual rights. Furthermore, this study aids policymakers and legal experts in crafting legislation that keeps pace with swift technological changes, aiming to harmonize the advantages of artificial intelligence with the necessity to reduce its associated risks.

The study adopted a descriptive-analytical approach that centers on exploring the phenomenon and analyzing legal materials and judicial decisions related to civil liability for faults caused by artificial intelligence in police agencies under UAE law. A comparative approach was also utilized to examine the similarities and differences between UAE law and comparative laws.

This study is organized around two key topics. The first topic focuses on the different artificial intelligence tools utilized in police work, offering an overview of



their capabilities, functionalities, and real-world applications. The second topic delves into the professional faults that can arise from using these AI technologies, especially those that may lead to civil liability. This section examines the nature and extent of such faults, highlighting their impact on law enforcement practices and individuals' rights. By exploring these two interconnected areas, the study aims to thoroughly understand AI's role in policing and the associated legal challenges.

THE FIRST TOPIC:

Human Capital and Economic Development: What is the Relationship?

This section addresses the definition of human capital and the importance of investing in it to meet the economic development challenges facing countries.

First requirement: Human capital concept.

The concept of "human capital" is widely used in economics as a factor of production alongside physical capital. Some trace its history back to the work of Adam Smith in the eighteenth century.¹ As for contemporary works², it returns to the analyses of development economist Theodore Schultz (1961) and Gary Becker (1964) in his book "Human Capital".³

After the theories that focused on material factors as a driver of economic development became widespread in the 1940s and early 1950s, attention gradually shifted to focusing on non-material factors such as education, knowledge and health, and the ideas of Schultz and his colleagues emerged, which developed into the "Human Capital Theory" revolutionizing the economic thought. This does not negate the fact that the importance of human resources in the production process had been reached by socialists before, such as Harbison (the human element is the active factor of production that creates material capital and exploits natural resources).⁴ Then, what is meant by this term?

¹OCDE, *l'investissement dans le capital humain, une comparaison internationale*, centre pour la recherche et l'innovation dans l'enseignement, 1998, p. 09.

² The term "human capital" was first used by Jacob Mincer in an article published in 1958, and has since reappeared strongly with the work of Schultz, Becker and others in the 1960s.

³Benjamin Vignolles, « Le capital humain: du concept aux théories », *Regards croisés sur l'économie*, n°12, 2012, p. 37.

⁴Amira Touati, "Human Capital: Its Concept, Theories, Problems and Methods of Preparation", *Review of Applied Economics and Statistics*, No. 22, December 2014, pp. 185-187.



Fitz-enz defines human capital as “*the experiences, knowledge, skills and abilities that individuals possess and use in production processes, which can be measured through training, development and incentive systems.*”¹ A definition links human capital to work and production within the organization.

Schultz provides a more comprehensive definition:

*“Human capital is the sum of human energies that can be used to exploit all economic resources, and represents the total, quantitative and qualitative sum of human forces available in society. If it represents the mental competencies and scientific levels of the population, it is determined by the educational level associated with experience and knowledge, but if it is total, it is calculated by the total society of the population.”*²

For its part, the Organization for Economic Cooperation and Development (OECD) defines human capital as “the individual's total knowledge, skills, competencies, and characteristics that help to achieve personal, social, and economic prosperity.” It also describes it as “an intangible asset that strengthens or maintains productivity, innovation, and employability”³.

These definitions confirm the importance of intangible assets—the knowledge, capabilities, and skills individuals possess—that can contribute to increasing the productivity and competitiveness of countries. They also indicate that the educational capabilities of individuals can be measured, developed, and compared with other organizational resources.

Second requirement: Investing in human capital to achieve economic development.

Economic studies consider spending on education and skill development as an investment, regardless of its costs, given the expected returns in the medium and long term. This is consistent with multidisciplinary studies on the pivotal role that

¹Ahmed Al-Maaniet al, **Contemporary Administrative Issues**, 2nded, Amman: Wael Publishing House, 2016, p. 245.

²Hala Tariq Salah El-Din, “The Impact of Investment in Human Capital on the Optimal Exploitation of Natural Resources, an Applied Study on Egypt in the Period 2000-2018,” **Journal of Political and Economic Studies**, Faculty of Politics and Economics, Suez University, Issue 04, Year 2, October 2022, p. 175.

³Stéphanie Fraisse-D'Olimpio, « Les fondements théoriques du concept de capital humain », **Ressources en sciences économiques et sociales**, article publié sur le site web :

- <https://www.ses.ens-lyon.fr/> (publié le 11-05- 2009, consulté le 25-12-2024 à 20h :00).



children's early years play in shaping productive and innovative workers. On this basis, investing in people has become one of the most significant topics in contemporary public policy. International organizations such as the World Bank and the Organization for Economic Cooperation and Development have urged governments to invest in human resources.

The World Bank defines investment in **Human Capital** as "the empowerment of people to enjoy good health and acquire knowledge and skills that they need to do with nowadays and future jobs, i.e. building a robust workforce able to develop and adapt with the world change, particularly technological transformation and climate change"¹. This definition summarizes the main objectives of investing in human resources. Countries' economies need healthy human energies capable of work and production, combined with education and training that provide skills and abilities to innovate and create competitive advantages in the present and future.

The term economic development refers to "the qualitative and structural change in a country's economy, including social and technological progress, with one of its most important indicators being the increase in per capita share of national product, which reflects growth in productivity and welfare, while simultaneously reducing poverty and eliminating inequality"². Economic studies have proven the close relationship between investment in human resources and achieving economic growth and social welfare for countries. For example, Denson's study on the U.S. economy (1910-1960) indicates that education contributed directly to increasing national income (investment in education contributed around 23% of the rate of increase in the national product). Similarly, Norman Hicks' study (1960-1977) on the relationship between economic growth rates, literacy, and life expectancy concluded that 12 out of 83 developing countries with the highest rates of economic growth had higher rates of the studied indicators (literacy and life expectancy).³

It is worth mentioning that there are multiple theoretical models for measuring human capital: Becker's model focuses on investment in training, Romer's model emphasizes the importance of knowledge and technological progress, and Schultz combines sustainable development and human capital development. These theoretical approaches are reflected in various measurement indicators from a practical perspective.

The UNDP Human Development Index (HDI) has reported since 1990 on three dimensions: life expectancy at birth (health index), education level (adult literacy),

¹Banque mondiale, « Investir dans le capital humain pour booster l'emploi », sur le site web :

- <https://www.banquemondiale.org/> (publié le 13-10-2023, consulté le 25-12-2024 à 12h 30).

²Ilham Nasser, "Economic Development," **Political Encyclopedia**, on the website:

- <https://www.politicalencyclopedia.org/> (published on 02-02-2023, accessed on 25-12-2024 at: 21h:00).

³Amira Touati, **op.cit**, pp. 191-192



and GDP per capita. The Human Capital Index, developed by the World Bank in 2018, focuses on health and education variables on a scale of 0-1, measuring the extent to which these factors contribute to the expected productivity level of the next generation workforce, thus enabling countries to adjust their human resource policies before losses occur. Meanwhile, the World Economic Forum's Global Human Capital Index focuses on long-term economic employment and the development and distribution of skilled labor, providing data for governments to address perceived gaps between education and economic development¹. All these indicators agree that investing in human resources from the early years has a positive impact on economic growth and development.

Perhaps the most noteworthy examples of returns on investment in human resources for economic development are Germany and Japan after World War II, along with Singapore, Malaysia, Hong Kong, and South Korea. This prompted the researcher to study the Singaporean model, which has been leading the world in recent years in the human capital index.

THE SECOND TOPIC:

Investing in Human Resources as a Pivotal Pillar for Economic Development in Singapore.

This section focuses on studying human resources in Singapore through the World Bank's Human Capital Index, updated in 2018, which examines two dimensions: education and health.

Education Policies, Investment in Singaporean People, and Their Economic Returns

Singapore was founded in 1819 as a British trading post, which was used to protect Britain's presence in India and expand its trade to China. Singapore's strategic importance increased after the construction of the Suez Canal in 1869, when it became an industrial and commercial link between Europe, Southeast Asia, and India. Singapore is a city-state with a small area; it consists of 63 islands with a total area of no more than 719 square kilometers. Its population was 1.7 million in 1960, reaching 5.9 million in 2023², making it one of the most densely populated countries in the world.

¹Iman Muhammad Ibrahim Ali, "The Role of Human Capital in Achieving Economic Growth: A Case Study of Some Arab Countries," **Studies**, Volume 22, Issue 01, January 2021, pp. 38-40.

² Population- Singapore, **Trading economics**, on the site web:
- <https://www.tradingeconomics.com/> (accessed on 02-01-2025 at: 10h :00).



Singapore gained independence from Great Britain in 1963 and separated from the Malaysian Federation in 1965. However, the general conditions prevailing in the country were poor, with widespread poverty, illiteracy, and ignorance, while conflicts within society increased due to ethnic and religious diversity. Faced with these conditions, then-Prime Minister Lee Kuan Yew had no choice but to think deeply and strategically about how to lift Singaporean society out of its poor situation in all areas. He turned to planning economic development without ignoring the issue of investing in people, who were the country's only resource and the main driver of any development.

Singapore's investment in human capital has been highlighted by the political leadership's emphasis on the education sector, starting with the expansion of primary education in particular. Statistics show that the average adult in Singapore in 2010 completed 10.6 years of formal education, up from just 2.1 years in 1950. This is higher than the average for adults in formal education in East Asia, which is estimated at 7.9 years. Singapore achieved the objective of "universal primary education" by the 1970s, with 44% of students continuing to high school by the 1990s¹.

Singapore has also focused on global, vocational, and technical education, ensuring that investment in the learning economy helps build a strong vocational training system and a high-quality innovation system, while making universities responsive to the labor market. With its policy of attracting foreign direct investment, the government agreed with foreign companies to train twice the number of technicians required in their factories, allowing companies to select the top graduates while other qualified workers helped attract new investments. The government then merged various training centers to create the Technical Education Institute under the Ministry of Education².

Through various writings on the subject of Singapore's education system, the pillars of its superiority can be identified as:

- Significant coordination between the education system and the requirements of economic development (export-oriented economy and the need for skilled workers, hence the focus on vocational and technical education directly after the primary stage, and the emphasis on integrating information technology to provide self-learning and expand learners' knowledge in the age of artificial intelligence and high-tech industries).
- English is the language of instruction in Singapore, but this does not prevent the teaching of mother tongues of different ethnicities alongside English.

¹World bank, Human capital project, « Comment les pays développent le capital humain, appliquer une démarche qui intègre l'ensemble de l'administration publique », avril 2019, PP 01-02.

²*ibid*, p02.



Despite criticisms about adopting the language of the former British colonizer as the primary language of instruction, the political leadership strategically chose the language of commerce and business, science, and international communication. This decision has enabled Singaporean students to benefit from Western science and technology.

- Deep consideration of primary education: six years of education focusing on languages, sciences, and mathematics, ending with an examination to determine the level, skills, and interests of each student. The system emphasizes students' thinking skills, directing them to appropriate specializations in the secondary stage (4-5 years), which consists of several tracks. The fast and integrated program provides opportunities for high-achieving students to advance. The post-secondary stage then paves the way for university education.
- Adopting innovative initiatives for improving education quality, such as the "Thinking Schools, Learning Nation" initiative in 1997 to develop a culture of education and creative, deep, and critical thinking, particularly in light of the transition to a knowledge economy; the "Innovation and Entrepreneurship" initiative in 2004; and the "Teach Less, Learn More" initiative aimed at developing education quality and creative learning.
- Generous spending on education: 2005 statistics indicate that 21.61% of GDP was allocated to the education sector, and 16.39% in 2015. While the percentage has decreased in recent years (11.22% in 2020 and 13.06% in 2021), it remains significant compared to Algeria and many developing countries.
- Attention is directed to teacher quality and skill development. Applicants to teacher training institutions are carefully selected. The Ministry of Education pays all their tuition fees and provides monthly salaries during their studies. In return, they must practice teaching for at least three years. During service, novice teachers receive two years of training with reduced workloads compared to experienced teachers. They attend regular training courses in their third consecutive year.

From the above, it can be argued that the distinction of the educational system in Singapore is primarily due to the focus on ways to consolidate the values of citizenship and adaptation to others in a multi-ethnic and multi-religious society from an early age. Teaching English as a primary language with the freedom to teach Malay, Hindi or Chinese, which strengthens the element of belonging to the national identity. The educational system also focuses on how to create a worker with high capabilities and qualifications in the future, through specialization immediately after primary school, and providing special tracks for the gifted and outstanding elements.



Second requirement: Public health, quality of life in Singapore and its economic returns

Public health was not among government priorities in the early years of independence, with Prime Minister Lee Kuan Yew focusing on three priorities: restoring Singapore's international standing, strengthening the military, and developing the national economy. This led the government at that time to content itself with providing basic public health services. However, this did not prevent planning for an effective health system once the security situation stabilized and the economy began to grow, recognizing that public health and healthcare are integral parts of the country's development planning. With a small population of no more than two million at independence, the government was concerned not merely with building hospitals, centers, or clinics, but rather with establishing the foundations for quality of life¹.

Among the strengths of the Singaporean health system are investments in public hospital infrastructure and a shift away from direct management, with the government focusing on monitoring the proper implementation of health strategies. The government has encouraged partnerships and competition with the private sector and mandated disclosure of treatment costs to promote transparency and fair competition. It has also supported quality training for doctors through expanded medical missions, training courses, and partnerships with international educational institutions. Additionally, Singapore has established a solid social protection system (Medical Protection of Life: MediShield) for health savings that protects families from falling below the poverty line when medical bills are high².

In 2015, the General Director of the World Health Organization described Singapore's health system as "a carefully planned system that has delivered first-class health care, with excellent health outcomes, at a lower cost than any other high-income country in the world"³. In terms of records, according to the World Health Organization, the coverage rate of basic health services in Singapore was 89% in 2021, an increase of 25% compared to 2020, i.e. the coverage rate reached

¹William A. Haseltine, **L'excellence accessible : l'histoire du système de santé de Singapour : Comment créer et administrer un système de santé soutenable**, traduction : Raphaël Cottin, 2014, pp 08-09.

²Khadija Isaac "The Reality of Investment in Human Capital in Algeria and Ways to Promote It with Reference to the Singaporean Experience," **Journal of Economic Analysis and Foresight**, Volume 01, Issue 01, 2020, pp. 95-96

³World Health Organization, "WHO Director-General at the Ministerial Meeting on Universal Health Coverage," on the WHO website:

- <https://www.who.int/> (published on 10-02-2015, accessed on 20-01-2025, at: 18h:00).



64%. While the global average for the aforementioned indicator was 68 % in 2021. These achievements are directly reflected in the life expectancy at birth index, which reached 83 years (World Bank Statistics 2022). The fundamental question arising here is: How did Singapore achieve these impressive results despite the high cost of healthcare?

The government has been able to keep its costs under control (within 4% of GDP) without declining service quality, despite rising costs due to technological advances, demographic growth, and the emergence of new diseases. While GDP per capita healthcare spending in the United States was \$7,000 (2008 statistics), Singapore's GDP per capita healthcare spending was roughly \$2,000 (2009 statistics).¹

One of the strategic mechanisms used by the government to reduce its health expenditures is the commitment of the sovereign wealth fund, GIC, through health investments and advanced medical technologies, in the long term, to improve treatment outcomes and revolutionize health care, support medical research (investment in education), build world-class hospitals, and preventive care. The government has relied on international cooperation initiatives and public-private partnerships in its investments².

To properly analyze the elements of success, the researcher identifies other factors that have contributed significantly to the effectiveness of the Singaporean health system:

- The small size of the city (a city-state that does not exceed a quarter of the area of Tizi Ouzou). Its entirely urban character with a population of no more than 6 million people represents essential variables in the analysis. Planning health policy in Algeria (with more than 46 million people distributed over an area of more than 2 million square kilometers, including rural and urban areas, mountains, plains, and plateaus) differs significantly from Singapore; controlling financing and management is simpler and easier in a small area with higher population density.
- The culture of cooperation and great coordination between ministries made the implementation of joint policies possible and effective.
- Relying on efficiency and merit in administrative and political employment, and encouraging scientific research to develop the health sector.
- Strict hygiene laws (sewage and waste disposal), health taxes on tobacco, alcoholic beverages and sugar-sweetened drinks, fines on chewing gum, strict laws on corruption and crime.

¹William A. Haseltine, *op.cit*, p. 43-45.

²Faster Capital, Investments GIC in Healthcare: Enhancing Singapore's Well-Being", online: <https://www.fastercapital.com/> (published on 26 June 2024, accessed on 20-01-2025, at: 14h:00)



After this brief presentation of the reality of investment in education and health as the two most important dimensions in the human capital measurement indicators, it is reasonable to have Singapore's ranking¹, as:

- World Bank Human Capital Index: Ranked first in 2017-2020 (0.9 on a scale of 0-1).
- One of the most innovative economies in the world (ranked fifth in 2023, fourth in 2024).
- Ranked 2nd in Talent Attraction Index for the year 2023, just behind Switzerland, and ahead of the United States of America, which came in third place.
- Ranked first in the index TIMSS "Trends in International Mathematics and Science Study" published every 04 years in 2019 and 2023.
- Ranked first in the index PISA "Programme for International Student Assessment"² issued every 03 years in 2018 and 2022.

Returning to the topic of economic development in Singapore, it has been able to achieve a renaissance and move from the third world to the first world in half a century. This harvest certainly came after great effort in planning and implementing economic development policies and creating a healthy business environment (political stability, strong infrastructure, attracting foreign direct investment, etc.), so that ports and airports are exploited and services and trade flourish, in addition to manufacturing and export. Singapore leads 67 participating countries in the Business Competitiveness Index according to the 2024 report, with 100 points³. It focuses on four indicators: economic efficiency, government effectiveness, enterprise effectiveness and infrastructure.

¹ The following references were relied upon:

- "Singapore leads the world and France is at the bottom of Europe in school science and mathematics", on the website:
- <https://www.aa.com.tr/ar/> (published on 05-12-2024, accessed on 24-001-2025 at: 08h:00)
- East Economy, "The best countries in the world in attracting talent 2023", on line:
- <https://www.asharqbusiness.com/> (published on 07-11-2023, accessed on 01-02-2025 at 09h:00).
- WIPO, "Global Innovation Index 2023: Switzerland, Sweden and the U.S. lead the Global Innovation Ranking; Innovation Robust but Startup Funding Increasingly Uncertain", online:
- <https://www.wipo.int/> (published on 27-09-2023, accessed on 15-02-2025 at 11h:00).
- <https://www.albankaldawli.org/> (accessed on 01-02-2025 at 19h:00)

² It measures the abilities of 15-year-old students in the areas of reading, mathematics and science.

³ World Competitiveness Ranking, "Rankings out of 67 countries", 2024, online:

- <https://www.imd.org/> (accessed on 20-02-2025 at 20h:00).



A quick review of economic figures demonstrates this development: export revenues increased from 197.68 million Singapore dollars in 1964 to 64,146.29 million Singapore dollars in 2022 (the highest level from 1964-2024). The gross domestic product reached 501.43 billion dollars in 2023, increasing the per capita GDP to 84,734.30 US dollars (2023), compared to 3,611.95 US dollars in 1960 according to World Bank statistics.

In parallel with economic development plans, educational decision-makers have formulated a precise educational system that focuses on technology, mathematics and science, supports talent, and encourages research and innovation at the university level. This has provided highly skilled and capable human inputs to institutions and companies, and enabled Singapore to benefit from human capital in innovation and manufacturing to achieve a quality of life and well-being that its leaders in the 1960s could not have dreamed of.

Third requirement: Lessons learned for Algeria from the Singaporean experience

Singapore is a stimulating and inspiring experience for developing and developed countries alike, because it has impressed the world in achieving its economic renaissance and occupying the first places in many fields. Its focus on investing in its human resources has had a major impact on achieving economic development. Accordingly: What lessons can Algeria learn from this experience to achieve economic take-off?

Section one: The Algerian economy and the need to move towards a productive economy

Studies have shown that gas and oil are fleeting resources, and rentier countries like Algeria must seriously plan new approaches to create wealth for current and future generations. Economic statistics indicate that the hydrocarbon sectors accounted for 78% of GDP in between 2018-2022 with hydrocarbons alone accounting for more than 92% from exports and 43% from budget revenues. This confirms that the Algerian economy is actually dependent on the fluctuations of oil prices in the global market¹.

Accordingly, the World Bank's economist in charge of Algeria, Cyril Dupont, warns, following the release of the World Bank's report on the economic situation in

¹Groupe de la banque mondiale, « Poursuivre l'effort de diversification : un rapport de la Banque mondiale souligne la nécessité de renforcer la résilience économique de l'Algérie dans un contexte d'incertitude mondiale croissante », Communiqué de la presse, sur le site web :

- <https://www.banquemondiale.org/>(publié le 26-10-2023, consulté le 21-02-2025 à 10h : 30)



Algeria (Fall 2024), that the impact of fuel prices on revenues, imports and public spending is the biggest risk to the macroeconomic outlook. This makes strengthening companies, improving export competitiveness and enhancing integration into global value chains an economic priority for the Algerian government¹.

Since Singapore started from scratch due to its lack of natural and material resources after its independence in 1965 and was able to move from the third world to the first world, the transformation of Algeria's economy from a rentier model to a productive one is entirely possible if planned carefully and strategically, particularly since Algeria enjoys natural and material resources as well as human capital. It is worth noting that Algerian political discourse on the need to diversify the national economy and focus on non-hydrocarbon exports has strengthened since the beginning of the third millennium. This was clearly evident in the economic recovery program (2000-2004), the growth support program (2005-2009), and the five-year plan (2010-2014), through financial allocations for agriculture, tourism, and manufacturing.

However, due to weak results compared to strategic objectives, particularly after the global economic crisis of 2014 and its effects on the national economy, the government has adopted in recent years a set of robust policies for actual economic take-off. Most notable is the enactment of a new investment law (22-18) to attract investment and enhance the business climate in Algeria, which includes a set of incentives, especially for those investing outside the hydrocarbon sector and in specific areas such as technology, innovation, and renewable energy. The government has also opened a digital portal for investors to ensure transparency and facilitate electronic public transactions to combat bureaucracy that has historically deterred investment in Algeria. In the same effort, the government has encouraged start-ups and business incubators and has focused on establishing university business incubators to foster entrepreneurial thinking among university students, enabling them to develop their own projects, establish their own companies, and employ others rather than waiting for employment. It has also created a ministry dedicated to the knowledge economy, start-ups, and micro-enterprises to support young entrepreneurs.

Accordingly, Algeria's political leadership has become aware of and convinced about the need to achieve economic take-off and has opened several channels for change to achieve this goal. However, despite numerous policies in this endeavor, Algeria still occupies weak positions in several key indices: the Business Competitiveness Index (ranked 89th out of 141 countries, with 56.3 points out of 100 in the Global Competitiveness Report issued by the World Economic Forum for

¹World Bank Group, "Algeria: Strengthening the Economic Policy Framework to Support Export Diversification," Press Release, Available at:

- <https://www.albankaldawli.org/>(published on: 18-11-2024, accessed on 25-02-2025 at: 15h:00)



2019), the Ease of Doing Business Index issued by the World Bank (ranked 157th out of 190 economies), and the Corruption Perceptions Index (ranked 104th out of 180 countries with 36 points out of 100 on the Corruption Perceptions Scale 2023, issued by Transparency International). This situation makes focusing on human capital the most reliable alternative for building a strong economy in the long term. The real challenge today lies in preparing human resources that are well-educated, trained, specialized and, above all, imbued with work ethics and good health that enable them to produce and innovate.

Section two: Investing in people for a confident economic take-off in Algeria

On the quantitative side, most statistics indicate that Algeria has achieved positive rates in health indicators, for example:

- Life expectancy at birth has increased in an upward trend, from 71 years in 2000 to 74 years in 2010, 75 years in 2015, and stabilizing at 76 years according to 2022 statistics.
- The infant mortality rate per 1,000 live births decreased, as it was 162 children in 1962, 40 Child of 1990, 35 child in 2000, 20 children in 2020 and 2022.¹
- The share of health spending in GDP has increased from 3.21% in 2000 to 4.64% in 2010, 6.33% in 2015 to decline slightly 5.01 % in 2021.²

As for education, the percentage of spending on it from the GDP reached 5.6% in 2023, while the global average spending was 4.7% in 2022 year.³ The Algerian education system is divided into pre-university education (primary and secondary) and university education (higher); Algeria has 25,859 pre-university schools (459 primary, 253147 middle schools and 147 high schools) with a budget exceeding 789 billion DA, and according to the Ministry of National Education, the school enrolment rate for children aged six years is 98.49%, and children between 6-16 years 95%. While the university has 115 educational institutions affiliated with the Ministry of Higher Education and Scientific Research (54 universities, 09 university centers, 39 National High Schools and 13 High schools). In addition to the educational

¹<https://www.albankaldawli.org/> (accessed on 26-02-2025 at: 09h:00).

² World bank group, "Current health expenditure (% of GDP) Algeria", on line: <https://www.albankaldawli.org/> (accessed on 25-02-2025, at: 13h:30)

³ World bank group, "Public expenditure on education », (% of GDP) Algeria, on line: <https://www.albankaldawli.org/> (accessed on 26-02-2025 at: 16h:00).



institutions under its guardianship (pedagogical guardianship). The sector's budget for the current year (2024-2025) amounted to 664 billion dinars.¹

However, in light of these figures that indicate the generosity of spending on health and education, the quality of health and education services is still below the level of aspirations (0.5/1 in the Human Capital Index). By studying the Singaporean model, the researcher believes that among the lessons that can be learned to advance education and health as two main requirements for a strong economy are:

In the health field:

- It is necessary to move towards rationalizing health spending and achieving quality health services at the same time, as quality is not necessarily achieved simply by increasing spending. Specialized studies agree that the real problem of the sector is primarily a management problem. While the world has moved towards implementing new public management approaches, both quantitative and qualitative, Algeria has found itself moving in the opposite direction by expanding the scope of spending without strict control over the outcomes of the health sector. Probably, the Singaporean experience is an evidence of the weakness of spending on the health sector, while achieving remarkable results in public health and health care indicators. This is because it averred that the state has to be organized and monitored, and not the direct manager of hospitals and health centres or the sole funder; as it has built health centres equipped with medical equipment to relieve the burden on hospitals. Unlike what exists in Algeria, which causes overcrowding in public hospitals that have become providing basic and specialized services.
- Singapore has opened the door wide for private investment in the health sector, with competitive prices and services, as the country has become known for medical tourism. However, the issue needs greater organization for partnership with the private sector in Algeria.
- The necessity of investing in human resources through training and development, intensifying health research, and encouraging medical missions abroad with a pledge to return and serve the country.
- The need to find funding bodies for health, as Singapore's sovereign wealth fund has contributed significantly to health investments, building hospitals and supporting research. It has also created a mandatory health savings account. MediSave as a plan to prevent families from falling below the poverty line

¹Al-Shaab Online, "664 billion DA budget for the higher education and scientific research sector", available on the website:

- <https://www.echaab.dz/> (published on 09-24-2024, accessed on 27-02-2025, at: 14h:00)



when medical costs increase excessively. While thousands of Algerians cannot afford expensive surgeries that require travelling abroad.

- Moving towards providing the conditions for quality of life, which can be achieved through cleanliness, preserving green spaces, healthy eating, health taxes (Singapore is pioneering in the field of cleanliness and applies strict laws on violators. Chewing gum is prohibited, throwing garbage in the street is prohibited, and it imposes health taxes and punishes those who trade or use drugs strictly, the penalty of which may reach the death penalty).

In the field of education:

Algeria ranked 119th in the Davos Education Quality Index 2019, after ranking 92nd in the 2018 ranking¹. While jumping to rank 23 globally in 2023 report. This indicates the initial fruits of recent reforms of programs and modernization of the education sector and training of trainers. Algeria was also ranked 89th in terms of the quality of scientific research institutions, which explains the recent trend of Algerian universities to open reform workshops in the field of digitization and rehabilitating scientific research.² Encouraging innovative projects and establishing business incubators to support students with start-up projects.

Among the lessons that can be learned in the field of education from the Singaporean experience:

- Paying more attention to primary education as it is the cornerstone of raising and educating children. Singapore has succeeded in raising children on the principles of citizenship from an early age, to respect those who do not belong to their religion or race. This has contributed to the formation of a homogeneous society despite the diversity of religions and ethnicities in it. In the fifth and sixth years, trainers also focus on discovering the skills, inclinations and tendencies of children so that they can be directed directly to the required specializations.
- Adopting English as a language of instruction is a smart idea from the political leadership so that learners can benefit from research published around the world. This is in addition to allowing the teaching of mother tongues. The opposite of what happened in Algeria, where education was politicized and the educational system experienced a real identity crisis.

¹ **Al-Raed Newspaper**, "Algeria ranks 11th in the Arab world in the quality of Arab education and a noticeable decline globally," July 28, 2019, on the website: <https://www.elraed.dz/> (accessed on 24-02-2025, at: 11h:00).

² Ilham Bouthelji, "Algeria is the fourth Arab country in the quality of the education system", **Al-Shorouk**, 11-04-2023, on the website: <https://www.echoroukonline.com/> (accessed on 27-02-2025, at: 10h:00).



- The need to focus on teaching mathematics, technology and science, and linking education to the economy and the labour market at all stages, and adopting specializations at an early age as Singapore did (immediately after primary school), while encouraging the talented and shortening their path. This explains the superiority of Singaporeans in the TIMSS and PISA index. As the unemployment recorded in Algeria for university graduates affects the humanities and literature more.
- Paying attention to the quality of teaching, teachers and professors, as we have presented the quality of selecting professors in Singapore and their specialized university system. While Algeria does not attach great importance to specialization, especially in employing primary school teachers, as graduates of law, biology or electronics can be employed and then they will be in education and methodology.
- Opening the way for private education to be a cooperative partner, and avoiding the chaos of parallel education that the national education sector is currently witnessing.
- Linking the university to the labour market, and creating students with innovative projects and ideas.

Conclusion:

The Singaporean experience has proven the importance of investment spending in people as a key requirement for achieving economic development, as they are the pivotal factor that ensures sustainability in development, efficiency and economic effectiveness. Singapore was able to move to an advanced country within 50 years when it exploited the only resource it possesses, “people”, and focused on educating, training and qualifying them, in addition to providing an effective health system that ensures their strength and productive capacity.

Algeria can benefit from this pioneering experience, which was able to achieve excellent results without expanding the scope of public spending, by providing an efficient health system and linking education to the economy, with the necessity of reforming curricula and content, especially in the early stages of education, to benefit from the efficiency of the workforce in the future.



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THE FIRST TOPIC

Artificial Intelligence Tools Used in Police

Artificial intelligence applications are one of the most important manifestations of the contemporary industrial revolution due to their abundance, diversity, and work in various scientific, economic, and medical sectors...Etc¹ in addition to being used in security, military and security uses. The technologies of police services can be divided into predictive police and intelligent police, and they will be dealt with in two sections within this section of the study.

First requirement: Predictive Policing

Predicting the criminal act is an old idea that has been associated with serious attempts by experts to determine the degree of danger of some people to society, and this is the basis that forms the essence of the concept of this term, as it revolves around the extent to anticipate its occurrence in the future, which helps prevent and counteract it. This perception is also associated with traditional crimes, such as using precautionary measures to abort the crime before it occurs by persons with high criminal risk.² Based on this, intelligent algorithmic forecasting is the objective equivalent of precautionary measures, as both are heading toward the future first and are based on probability.³

First Section: Definition of Predictive Policing

The concept of predictive police appeared due to the development in the use of artificial intelligence tools since the Eighties of the twentieth century, when computer technologies became able to perform graphical analyses that help predict some future events, which in the nineties led to the emergence of the term "intelligence police" or "intelligence-led Policing" (intelligence-Led Policing), which was largely associated with the American and British perceptions.⁴

¹ Ahmed Majid: "Artificial Intelligence in the United Arab Emirates," Economic Studies and Policies Administration - Ministry of Economy, Abu Dhabi - United Arab Emirates, 2018, p. 3.

² Muhammad Salama Abdel Moneim Al-Sharif: The Legal Nature of Crime Prediction Using Artificial Intelligence and Its Legitimacy, Arab Journal of Forensic Sciences and Forensic Medicine, Naif Arab University for Security Sciences, Volume (3), Issue (2), 2021, p. 342.

³ Mahmoud Salama Abdel Moneim Al-Sharif: The Legal Nature of Crime Prediction Using Artificial Intelligence and Its Legitimacy, previous reference, pp. 345-346.

⁴ Marilyn B. Peterson: The Role of Analysis in Intelligence-led Policing, In: Angus Smith et al: Intelligence-Led Policing International Perspectives on in the 21st Century Policing, International Association of Law Enforcement Intelligence Analysts, Inc., New Jersey- USA, September 1997.p6.



In the American context, intelligence policing is defined as the process of processing data on crimes and circumstances that may contribute to their occurrence in a way that helps to produce important intelligence that requires a direct reaction (Actionable Intelligence), aimed at assisting law enforcement agencies in developing tactical responses to current risks and developing strategic plans related to emerging and changing threats.¹ In the British context, this term refers to activities that contain identifying and analyzing information and data related to situational crime, and the usual criminal, and using them to reach a correct decision on how to distribute police resources, and identify the types of crimes that will be focused on and confronted.²

Previously, the concept of (intelligence police) was mainly based on using intelligence information to shape security policy, strategies, and operations rather than employing it to solve or support investigations related to a particular case.³ In contrast, recently, with technological development, the term predictive police has begun to spread more widely, and there is a noticeable interest in analytical tools for big data to make crime prevention forecasts.⁴ However, predictive police lacks a precise and agreed definition due to the novelty of the term, the multiplicity of views on it, in addition to the continuous development in this field technically, generic can refer to any approach To combat crime through the use of predictive algorithmic technologies.⁵

Second Section: Objectives and Functions of Predictive Policing

In general, predictive analysis aims to anticipate what may happen in the future through quantitative, statistical, and logical methods, as well as data mining tools.⁶ The main goal of predictive policing is to prevent or thwart crimes early by using intelligent mechanisms. On this basis, such goals are the following:⁷

¹ Jeremy G. Carter and David L. Carter: Intelligence-Led Policing Conceptual and Functional Considerations for Public Policy, Criminal Justice Policy Review, Vol. (20), Issue (3), December 2008. pp310–325.

²Jeremy G. Carter and Scott W. Phillips: Intelligence-led Policing and Forces of Organisational Change in the USA, Policing and Society, Vol. (25), Issue (4), 2014. pp1-25. p3.

³ Shadi Abdel Wahab Mansour: Predictive Policing: Increasing Reliance of Western Security Agencies on Intelligence Methods, Academic Papers, Future Center for Research and Advanced Studies, Abu Dhabi, United Arab Emirates, Issue (4), October 2018, p. 2.

⁴ Walter L. Perry et al: Predictive Policing: The Role of Crime Forecasting in Law Enforcement Operations, RAND Corporation, WASHINGTON, DC, USA, 2013. p1-2.

⁵ Andrew Guthrie Ferguson: Predictive Policing and Reasonable Suspicion, Emory Law Journal, 62(2), 2012. pp261–325. p265.

⁶ Rashid Mohamed Hamad Al-Mari: "Security Prediction and Its Role in Crime Prevention - An Analytical Study," Annual Journal of the College of Islamic and Arabic Studies for Girls in Alexandria, Al-Azhar University - Egypt, Issue (38), Part (6), 2022, pp. 683–751, p. 710.

⁷ Shadi Abdel Wahab Mansour: Predictive Policing, previous reference, pp. 2-3.



- 1- Enhancing the analytical skills of law enforcement agencies; the development in this field has contributed to the creation of new police functions, such as technical functions and analytical functions, including the functions of crime analysts, who perform the tasks of processing data related to crimes and suspects, and identifying their patterns.
- 2- Employing the use of artificial intelligence tools by analyzing and storing reports of crimes and everything related to them, and suspects.
- 3- Using espionage and surveillance tools; using smart networked computer machines and using a group of informants to collect information about the places being supervised.
- 4- Data search aims to process and analyze big data to transform it into usable information after that, and intelligent computer technologies based on algorithms and software have been developed in data mining and processing in various sectors and devices, including police devices.¹

This term is defined as a database analysis technique or mechanism that attempts to identify patterns and relationships related to a previously unknown set of data. In this analysis, advanced statistical methods, artificial intelligence methods and neural networks are used to carry out the discovery and prediction processes. Predictive police always proceed from the assumption that analyzing large amounts of data helps to access information related to identifying patterns of security threats before they occur. Therefore, they are based on methodologies or analytical services that contribute to crime prediction.²

In the same direction, this tool has played an important role in raising the level of the police's ability to predict terrorist attacks through deep data mining to access as soon as possible the most accurate information about criminal groups and their supporters, such as suppliers of materials that can be used in the manufacture of explosives, and in this context, three predictive applications can be: The US National Security Agency's (Skynet) terrorist Identification Program, a program based on an intelligent algorithm that processes and analyzes the metadata of millions of individuals who use a mobile phone, was applied in 2007 to monitor 55 million users in Pakistan, and although its effectiveness has not been proven, it was able to determine the predictive value of data on individuals with close ties to terrorist groups.³

¹ Iyad Zaarour: Data Mining and Economic Forecasting, National Institute of Administration, Beirut - Lebanon, 2015, p. 2

² Mohammed Bin Rashid Centre for Government Innovation: The Path to Innovative Solutions, previous reference, p. 25.

³ Kathleen McKendrick: Artificial Intelligence Prediction and Counterterrorism, International Security Department, Chatham House, Britain, 2019. pp7-11.



Since 2016, the Dubai Police has started using "predictive police technologies" through the (Intelligent Security prediction of crimes) system as part of its strategy to employ artificial intelligence tools in the areas of crime prediction and reduction, providing a database of possible places of occurrence of crimes, allowing rapid intervention to control them, as evidenced by the Dubai Police's use of surveillance cameras integrated with artificial intelligence to provide them with alerts if a person is spotted in a dark corridor acting in an abnormal situation, which may indicate the likelihood of a crime,¹ and also relies on advanced systems of devices in its centers and operating rooms and periodicals in addition to big data analysis systems, which makes it On guard in the fight against crimes.

Second Requirement: Smart Police

This concept is based on the employment of an upgraded version of artificial intelligence tools, which is known as strong artificial intelligence (intelligence Artificially forte), which is characterized by a subjective ability to think and perform tasks in a variety of unexpected conditions independently and without human supervision so that it can learn from its experiences and can improve its performance.² This concept includes all intelligent machines capable of collecting and deducing information to carry out certain activities and tasks for decision-making autonomously and independently of humans, which fall within the scope of what is known as robot (robot) (Robot). The origin of this term from the linguistic point of view goes back to the word (robot), which means difficult work.³

In light of the foregoing, a police robot can be defined as a machine with artificial intelligence that is designed to perform the tasks and functions of policemen and can work autonomously and independently of humans, and can simulate the behavior of humans from security elements and make appropriate decisions in various circumstances to achieve security in society. There are multiple models of robots that are used to perform various police functions and tasks around the world, and in this context, we address the most essential Smart Police models used in the UAE as follows:

¹ Ammar Rashid Alay and Mohamed Nour Eldin Abdel Majid: "The Use of Artificial Intelligence Applications in Crime Prediction and Prevention," Sharjah University Journal of Legal Sciences, Volume (20), Issue (4), December 2023, pp. 371-420, p. 396.

² Mahmoud Hassan Al-Sahli: "The Basis of Civil Liability for Autonomous Artificial Intelligence: Traditional Frameworks or a New Vision?", Journal of Law for Legal and Economic Research, Issue 2, July 2022, p. 37.

³ Siham Derbal: "The Dilemma of Recognizing the Legal Personality of Intelligent Robots," Journal of Judicial Ijtihad, Volume (14), Issue (29), March 2022, pp. 453-464, p. 455.



1. Smart Police Vehicles are robots designed in the form of cars and bicycles that carry out police patrol tasks, equipped with modern computer systems that allow direct identification of accident sites and a faster display of roads leading to the scene of the accident, and advanced generations of these machines are characterized by voice technologies that allow the employee to control several functions while driving, as well as the automatic recognition of vehicle registration plates, these vehicles are also equipped with drones and high safety features. Together with other digital intelligence systems used in police services, smart police vehicles coordinate operations between devices and units to detect multiple patterns of deviant behavior through "predictive analysis".¹

2- Police drones can collect and scrutinize crime scene information using three-dimensional imaging of accident sites. They can also re-enact the incident, perform surveillance tasks, and participate in search and rescue missions, in addition to their ability to monitor crowds and gatherings, control borders, traffic management, etc., especially in high-risk situations, as drones can reduce the degree of danger that police officers can be exposed to without adversely affecting the pursuit of suspects.² Since 2015, the Dubai Police has used drones to monitor crimes and prosecute perpetrators, and monitor traffic and current and potential violations.³

3—Facial Recognition Systems use artificial intelligence tools and combine predictive police tasks with smart police features, enabling them to work quickly and easily due to their ability to access all cloud computing systems and police information seamlessly. This technology is also used as scanners and sensors to perform other conditional tasks and functions such as photography, surveillance, etc.⁴ In this context, Dubai Police has developed the uses of smart robots in police devices through the introduction of the police robot system, which identifies criminals and detects wanted persons, and notifies the police to take action to arrest them, and this system is characterized by facial recognition technology, as it can broadcast videos

¹ Interpol Innovation Centre: "An Analysis of Foreseeing the Future of Policing: First Steps Towards a New Conceptual Model," Version (1), Interpol, United Kingdom, March 2022, p. 31.

² Hussein Yusef Abu Mansour: "Artificial Intelligence and Its Security Dimensions," Security Policy Papers, Naif Arab University for Security Sciences, Volume (1), Issue (1), 2020, pp. 1-18, p. 13.

³ Fayege Awadain: "Uses of Artificial Intelligence Technologies Between Legitimacy and Illegitimacy," Previous Reference, p. 18.

⁴ Interpol Innovation Centre: "An Analysis of Foreseeing the Future of Policing," Previous Reference, p. 30.



directly to the Police Control Center, which contributes to maintaining public security in the city of Dubai.¹

Moreover, the Smart Corridor and e-portal technology is one of the complex smart methods at land crossings, airports and ports of the UAE. It is a corridor equipped with smart technologies to detect the identity of those coming to the country from abroad, their safety and their freedom from infectious diseases, dangerous and rapidly spreading viruses, and to ensure that they are not carrying prohibited materials, such as drugs, weapons, explosive materials, etc.² In addition, it has used smart technologies to monitor and protect its borders at Dubai International Airport, as there are about 80 cameras equipped with facial recognition technology capable of checking the identity of passengers within ten seconds, which makes it easier to detect any security threat quickly, and this mechanism was fully adopted at immigration offices by 2020 to automate electronic processes.³

So, in 2018, Dubai City took the top position in the most used cities of facial recognition technologies in shopping malls to monitor and analyze the behavior of visitors, in the stands of sports clubs, and at conferences to monitor all participants and analyze their behavior.⁴ It is worth mentioning that facial recognition technology has contributed in 2020 to enable the Dubai Police to restore the image of a man whose body decomposed at sea, which helped to reveal his identity, especially since the body was in a very bad condition with which it is difficult to use DNA to identify it, which is an unprecedented success that the Dubai Police was able to achieve.⁵

4- Smart Imaging Devices: Smart imaging device technologies have been integrated into many police tasks, such as satellite imaging devices that have high resolution in day and night imaging, passing through fixed imaging devices known as closed-circuit television (CCTV), which are installed in specific areas at airports, ports, border crossing sites, markets, public neighborhoods, roads, traffic monitoring, traffic violation monitoring, etc., these devices often work around the clock, moreover, there are drone imaging devices. Accurate imaging technologies are currently being developed in security services, and they are being integrated into advanced systems

¹ Abdul Rahman Ali Ibrahim Ghoneim: "Applications of Artificial Intelligence and the Protection of Human Rights in Security Work," International Journal of Jurisprudence and Law, Issue (120), October 2022, p. 70.

² Fayege Awadain: "Uses of Artificial Intelligence Technologies Between Legitimacy and Illegitimacy," Previous Reference, p. 34.

³ Ammar Rashid Alay and Mohamed Nour Eldin Abdel Majid: "The Use of Artificial Intelligence Applications in Crime Prediction and Prevention," Previous Reference, p. 388.

⁴ Ammar Rashid Alay and Mohamed Nour Eldin Abdel Majid, Previous Reference, p. 391.

⁵ Abdel Rahman Ali Ibrahim Ghoneim: Applications of Artificial Intelligence and the Protection of Human Rights in Security Work, previous reference, p. 72.



inside cars, civil aircraft, and drones to provide simultaneous video of current events. In addition, many security agencies are testing body-mounted cameras for recording and surveillance purposes.¹

The UAE has been able to integrate smart technologies into security agencies and other sectors. To support this trend, the government has created two new ministerial positions, namely, Minister of State for artificial intelligence and Minister of State for Advanced Sciences, each of which is responsible for developing a short-and long-term strategy for the federal government's work programs in the field of technology and innovation to achieve the Sustainable Development Goals and the UAE Vision 2071. At the same time, the UAE witnessed a growth in its investments in this field by 70% during the years (2016-2023), the same period in which artificial intelligence technologies were used in its security system.² In addition, the UAE Ministry of Interior implemented the "Robotok project" to detect cases of abuse against children. The UAE is an Arab country with a pioneering international experience in using smart machines and robots in police services.

THE SECOND TOPIC

Forms of Professional Fault in AI Policing

Despite the remarkable progress achieved by the security sectors in their work thanks to artificial intelligence applications, they have not yet reached the stage of reliability enjoyed by human intelligence. These technologies are still and will continue to be, by their automated nature, prone to faults, the problems resulting from their exploitation, and the faults that may result from them. This, in turn, made hopes a little modest about these technologies. Hence, this requirement addressed the professional faults resulting from using artificial intelligence technologies in police work in two independent requirements.

First Requirement: Faults of Algorithmic Bias in Predictive Policing

The effectiveness of the work of artificial intelligence tools depends mainly on the data available to them, so all stored and used data must be complete, correct, and accurate; any fault in them will lead to inaccurate predictive analytics and can cause damage to individuals, their property and legal rights. These faults are known as algorithmic Bias faults, as erroneous readings and analyses issued by intelligent

¹ Interpol Innovation Centre: Analysis for Foreseeing the Future of Policing, previous reference, p. 30.

² Omar Rashid Alai and Mohamed Nour El-Din Abdel Majeed: The Use of Artificial Intelligence Applications in Crime Prediction and Prevention, previous reference, pp. 383-384.



algorithmic technologies can lead police agencies to make and implement erroneous arrest decisions based on an fault in recognizing a person's face or to accidents and traffic chaos due to erroneous predictive analytics.¹

Algorithmic bias is defined as an fault that occurs when artificial intelligence tools are fed incorrect data reflecting prior estimates or causing data to be weighted over other data, which leads to incorrect results or an fault in data analysis, and this does not depend on the technological aspect but extends to aspects of our lives as humans as well as due to the overlap of bias factors between the human and automated sides, and therefore this may contradict aspects related to ethical rules, and algorithmic bias faults may appear due to two reasons:²

1- Cognitive bias It refers to a variety of unconscious faults in human thinking, which affect individuals' judgments and decisions. Most often, these biases arise as a result of unconscious efforts that the human brain switches to simplify the procedures for processing data stored in memory, which reaches it through the senses and various cognitive processes; psychologists have been able to identify and classify more than 180 Cognitive biases in humans that may leak into intelligent algorithms.

2- Lack of data: the algorithm's handling of incomplete and incomplete data leads to the production of erroneous Analyses, readings, and predictions that are not without biases, and algorithmic biases appear in three main types, namely:³

a) Interactive bias occurs when users of smart technologies interact with the system. Similarly, when a white person enters personal data, the algorithm gains more experience processing similar data and may treat this data as belonging to all white-skinned individuals, reinforcing the bias toward this category without taking into account diversity or differences.

b) Latent bias results from data analysis by algorithms to arrive. A set of relationships that connect one set of data, and data is often biased to one category at the expense of another

c) Optional bias is in the form of data selected by users of the algorithm, which may include discrimination based on gender, color, religion, etc., because it acquires the

¹ Omar Abdul Majeed Musbeh: Employing Predictive Justice Algorithms in the Criminal Justice System, previous reference, pp. 237-238.

² Nazem Hassan Rashid and May Ablahad Afram: Auditing Bias in Artificial Intelligence in Light of the Artificial Intelligence Auditing Framework of the Institute of Internal Auditors (IIA) – An Analytical Theoretical Study, Journal of Contemporary Economic and Commercial Studies, Volume (6), Issue (1), 2023, pp. 439.

³ Balqis Qaraza and Suad Qasaa: Digital Bias in Artificial Intelligence Systems, International Conference: The Intersection of Artificial Intelligence with Reality and Law, p. 5.



user's bias and acts on it in its analyzes, which in turn leads to a lot of damage to individuals and property, and the frequent occurrence of these biases has been observed in the predictive police work in the US state of Los Angeles (). Studies have revealed that police predictive techniques are racially biased, with black defendants rated higher than others, even when non-black convicts are charged with more serious crimes.¹ Facial recognition technologies are also based on two types of characteristics of the features of human faces, namely general and common characteristics, and permanent, distinctive and non-recurring individual characteristics of each person that are difficult to simulate and fake²

Since algorithms may lead to suspicion of a person, predictive policing has been heavily criticized for the bias and discrimination of those uses, which support the policy of subjecting, targeting, and discriminating against certain population groups or specific areas of cities to the algorithm. This is an example of what the reports revealed that the COMPAS system issues inaccurate results systematically, in addition to the negative effects because of the wrong use in bail and sentencing processes, resulting in a significant discrepancy in the consequences of criminal sentences issued by courts that rely on smart technologies in their work.³

As part of efforts to reduce the occurrence of professional faults and their legal consequences in the security services, in February 2019, the European Parliament adopted a resolution stating that algorithms cannot be adopted in decision-making systems without prior impact assessment, and this decision reconsidered the legal feasibility of introducing smart technologies into the work of the security service.⁴ At the same time, the UAE has subjected the work of predictive policing to experimentation and testing for up to four years before it is actually launched, with work on developing the mechanisms of these technologies so that they can work properly and in some way reduce the incidence of algorithmic biases, and this is consistent with the opinion of some specialists that the advantages of digital

¹ Arwa Abdulrahman Al-Jaloud: The Provisions of Artificial Intelligence Applications in the Judiciary, Saudi Judicial Scientific Society - Judicial Studies (36), 1st Edition, Qada for Publishing and Distribution, Riyadh, 2023, p. 70.

² Chouaib Moujahdi; Sanaa Ghouzali ; Mounia Mikram and Driss Aboutajdine: Multi-View Face Recognition, J. of Commun. & Comput. Eng., Modern Science Publishers, Volume (2), Issue (1), 2012. pp46-50.

³ Osondi A. Osoba and William Welser IV: The Risks of Artificial Intelligence to Security and the Future, Brand Foundation, Virginia, United States of America, 2017, p. 7.

⁴ European Parliament resolution of 12 February 2019 on a comprehensive European industrial policy on artificial intelligence and robotics (2018/2088(INI)), The European Parliament, P8_TA (2019) 0081.



intelligence are much greater than the disadvantages faults that can result from it or its use.¹

Despite this, there are no special laws in the UAE regulating the use of artificial intelligence tools in predictive police work so far, and the legislation currently in force does not provide a comprehensive treatment of all the problems arising from its operation, as most legislations considered the work of programs as an extension of its users who bear absolute responsibility for its results, as if issued directly by them. This legislative reality shows that the problem of algorithmic bias overshadows the use of predictive policing in the work of police agencies because it negatively affects the credibility and integrity of analytics resulting from technologies due to the lack of technical standards to ensure their neutrality per what the laws stipulate, and this is what makes this problem a major challenge at the moment.

Second requirement: Privacy Faults in Smart Policing

The use of artificial intelligence technologies in the work of police agencies is based on the analysis and processing of huge amounts of personal data related to individuals, which necessitates the need to protect the privacy of this information and ensure that it is not exploited illegally or unethically. Data must also be collected with the express consent of individuals and the objectives of their use must be set within a legitimate scope. In addition, the stored data must be secured and used in a secure manner to preserve the privacy and rights of individuals.² Thus, two types of professional faults made by AI tools in police work can be distinguished as follows:³

The first type includes unintentional faults that may lead to a disturbance in the intelligent system as a whole, in a way that leads to its inability to perform its functions properly, and this type of fault is due to purely technical reasons related to the way those technologies are designed. Of course, those faults can lead to making incorrect decisions against some individuals, including a violation of their privacy, rights, and freedoms.

¹ Ashraf Fathi Khalil Al-Rai: Investigation and Inference of Crimes Through Artificial Intelligence Systems, Journal of Zarqa University for Legal Studies, Volume (4), Issue (1), 2023, pp. 156-175, p. 163.

² Amr Ragab El-Sayed Sadek: The Impact of Artificial Intelligence on Values and Human Rights: The Right to Personal Data Protection, Journal of Benha for Humanities, Issue (2), Part (4), 2022, p. 899.

³ Hammam Al-Qousi: Faults of Algorithmic Trading Robots Powered by Artificial Intelligence – A Prospective Study on the Horizons of Civil Liability in the Stock Market, Journal of Jil for In-Depth Legal Research, Jil Scientific Research Center, Issue (41), July 2020, pp. 11-38, pp. 18-19.



The second type involves intentional faults that occur due to the operator's misuse of smart technologies, that is, those that are used in ways contrary to the law. This type of fault has received great attention from American jurisprudence, which pointed to the possibility of using artificial intelligence tools to break the law, such as the illegal exploitation of personal data and the violation of the rights and freedoms of individuals guaranteed by law.¹

In this context, some warn against relying on smart mechanisms in sensitive and important security data to preserve their privacy, in addition, the data is constantly evolving, which leads to distortions in the processing of decisions, affecting the ability to make them.² Additionally, the failure of smart technologies may cause great dangers if their use is generalized in police agencies, as human faults often take on an individual character that differs from each time, and on the contrary, these technologies are characterized by repeating their faults in the same way, which results in wide-ranging consequences.³

Also, using persons' information of individuals without their knowledge or prior consent by constitutes a violation of privacy and the inviolability of the private life of individuals, as the security elements rely mainly on databases such as police information systems, commercial or transaction-related databases such as credit cards, databases that rely in their sources on networks of sensors and tracking devices, such as satellite imaging, traffic monitoring systems, tracking cellular data of mobile phones, and other data that help monitor and track the behavior of criminals and suspects, and in any case, the if the police get This data may lead to a violation of privacy in multiple ways and forms.⁴

When using individuals ' data with their prior knowledge, they will reject the restrictions imposed on them in the digital field, and if they agree to undergo monitoring and monitoring systems, the individual will change their automatic behavior, which can reveal the truth of his intentions and thoughts, leading to the loss of the informational value of the stored data, resulting in the unloading of these means from their content and content. Moreover, the use of predictive police technologies may open the way for violations of human rights and freedoms since

¹ Mihailis E. Diamantis: The Extended Corporate Mind: When Corporations Use AI to Break the Law, North Carolina Law Review, Vol. (98). No. (4), 2020, p895.

² Caryn Devins; Teppo Felin; Stuart Kauffman & Roger Loppl : The law and big data, Cornell Journal of Law and Public Policy, Vol. (27), Iss. (2), January 2017, p359.

³ Elsa B. Kania: Battlefield Singularity: Artificial Intelligence, Military Revolution, and China's future military power, Washington, DC: CNAS, November 2017. pp1-74.

⁴ Mohamed Salama Abdel Moneim El-Sherif: The Legal Nature of Crime Prediction Using Artificial Intelligence and Its Legitimacy, previous reference, p. 343.



data collection is mostly carried out in random ways, which makes it target the entire population without distinction between suspects and innocent people.¹

Most of the professional faults of smart technologies used in security agencies are caused by the inability of these technologies to achieve sufficient accuracy and consider demographic differences such as race, gender, and others. although they improve over time thanks to the mechanism of self-learning and deep learning, the cases in which they failed led to faults that caused harm to innocent individuals, and this, in turn, led to the emergence of severe reservations about their reliability, especially about ensuring privacy, social justice, and minority rights. According to human rights organizations, the excessive exposure of minorities to predictive police measures contributes to fueling prejudice against certain areas monitored by predictive police programs as a result of the police intensifying its security measures in these areas, such as the spread of patrols in places that have proven in their historical record that they are prone to crimes a lot due to the increasing cases of it often ends in unfair discriminatory situations.²

In this regard, some have called for the establishment of state-owned information banks to be used for various purposes, such as arresting perpetrators of crimes and accessing Outlaws. In contrast, others have called for the possibility of tracking people and knowing their movements through the data and information they provide to geo-location tracking devices and to technologies that have the feature of facial recognition, which prompted many law enforcement and criminal justice workers to declare their full reservation to these actions.³

One of the most common faults in this area is those uses related to "facial recognition" technologies, such as those used by security agencies in mass surveillance, because they interfere extensively in the private lives of individuals, and this is what made them classified among the most intelligent technologies violating privacy, and they also include a high degree of abuse of the law, because they exceed the principle of primary innocence when dealing with individuals by implicitly a

¹ Kathleen McKendrick: Artificial Intelligence Prediction and Counterterrorism, Op. Cit. pp12-15.
Kathleen McKendrick: Artificial Intelligence Prediction and Counterterrorism, Op. Cit. pp12-15.

² Mary Schroeder: Artificial Intelligence and Combating Violent Extremism, previous reference, p. 19; Osondi A. Osoba and William Welser IV: Artificial Intelligence with Human Features: Risks of Bias and Faults in Artificial Intelligence, Brand Foundation, Virginia, United States of America, 2017, p. 13.

³ Rizk Saad Ali: The Use of Artificial Intelligence Technologies and Data Analysis in Crime Detection, previous reference, p. 1630.



crime in origin, and many individuals may have remained For many years in the circle of algorithmic suspicion.¹

It can be seen from the foregoing that while these technologies seem to be very useful to the police in their work, their actions are often illegal, and they are often used as infallible, which represents a great threat to the right to privacy, in addition to the possibility of manipulating these technologies towards certain issues, which may lead to undisciplined results, and consequently leads to different treatment by the administrative control authorities within the country.

The absence of legal regulation of the use of these technologies in the work of the security services negates the legality of their use, and makes it incorrect to consider them as a legislative means on which the public prosecution and the judiciary rely in detecting crimes and identifying the perpetrators, because taking them among the means can make the investigation mechanism invalid, and therefore this will invalidate all subsequent actions successively, due to the lack of a legislative text that gives it the necessary legitimacy, regulates the mechanisms of their use, not to mention the role of the law in reducing faults and resulting violations of privacy and protecting the private rights and freedoms of individuals.² Based on the foregoing, the application of artificial intelligence tools in security services still requires the development of comprehensive and integrated laws and regulations that consider the complex nature of these technologies and ensure their use safely and legally without compromising privacy or harming individuals and society.

Conclusion

This study showed that the use of smart technologies in police agencies revealed many faults that may harm individuals, which raised many questions about the legality of these tools and smart applications and the legal foundations that regulate their operation. Currently, countries are using many artificial intelligence tools to help them combat crime and reduce violence in society, especially in predictive policing and facial recognition technologies. These means have negative legal and social implications, especially regarding algorithmic bias excavations that usually provide inaccurate and unsatisfactorily credible results. For example, predictive police algorithms often focus on certain demographics or regions based on past crime statistics, reflecting stereotypes in differentiating between different groups in society.

¹ The Arab Center for the Advancement of Social Media: Facial Recognition Technology and the Rights of Palestinians, previous reference, p. 4.

² Ashraf Fathi Khalil Al-Rai: Investigation and Inference of Crimes Through Artificial Intelligence Systems, previous reference, p. 166.



For example, the Compass system in the United States has shown how algorithmic choices can lead to unfair treatment and court rulings.

Also, a significant problem is the violation of privacy associated with AI-powered policing. Tools such as facial recognition and geolocation rely on collecting and analyzing extensive personal data, often without explicit consent. Such large-scale surveillance violates individual privacy and reduces confidence in law enforcement. The ambiguous nature of data collection and use exacerbates these concerns, making individuals vulnerable to misuse and exploitation of their personal information. In the UAE, predictive policing is often unregulated, leading to legal uncertainty and potential abuse .

Moreover, the technical limitations of AI systems, including their vulnerability to defects and inability to consider demographic differences, emphasize the need for continuous improvement and supervision. To address these challenges, it is important to remove algorithmic bias by training AI systems on diverse, representative, and fair datasets. Privacy protection should also be strengthened through laws enforcing informed consent, data security and accountability .

In short, although AI technologies offer promising options for the police, their deployment must comply with ethical standards, legal protection, and dedication to protecting individual rights. Addressing algorithmic biases, privacy violations, and regulatory shortcomings is vital to ensure that AI acts as a force for progress and not a source of harm, thereby promoting a more just and equitable society.

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