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THESIS

**INTRODUCING ARTIFICIAL INTELLIGENCE INTO THE
UNITED STATES LAW ENFORCEMENT COMMUNITY:
LEARNING FROM FOREIGN LAW ENFORCEMENT
AGENCIES**

by

Ana Z. Lalley

December 2019

Co-Advisors:

Cristiana Matei
Lynda A. Peters (contractor)

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**INTRODUCING ARTIFICIAL INTELLIGENCE INTO THE UNITED STATES
LAW ENFORCEMENT COMMUNITY: LEARNING FROM FOREIGN LAW
ENFORCEMENT AGENCIES**

Ana Z. Lalley
Police Chief, Elgin Police Department
BS, Illinois State University, 1996
MA, Loyola University, 2002

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December 2019**

Approved by: Cristiana Matei
Co-Advisor

Lynda A. Peters
Co-Advisor

Erik J. Dahl
Associate Professor, Department of National Security Affairs

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ABSTRACT

This research explores how artificial intelligence (AI) can be successfully incorporated into a U.S. law enforcement agency by focusing on AI's challenges and limitations. Some of those challenges include a lack of current information about AI in this setting, particularly in the United States, and legal considerations. This thesis examines how the Dubai Police have implemented AI, compares U.S. law enforcement approaches to AI with those of foreign agencies, and ultimately creates a model framework that law enforcement agencies in the United States can use to incorporate AI into their practices.

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LIST OF ACRONYMS AND ABBREVIATIONS

AI	artificial intelligence
BWC	body-worn camera
CRIS	Cardholder Risk Identification System
FAIS	Fin-CEN AI System
FBI	Federal Bureau of Investigation
LPR	license plate reader
NGI	Next Generation Identification
UAE	United Arab Emirates

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EXECUTIVE SUMMARY

The introduction of technology into U.S. law enforcement agencies has redefined police practices. A 2011 survey of more than seventy agencies in the United States, ranging in size from 10 to 13,088 officers (with an average of 949), discovered that over 70 percent of agencies use some form of technology, such as predictive policing, license plate readers, in-car video, and/or social media.¹ Law enforcement professionals who have witnessed the evolution of technology over the past twenty years have also used technologies such as body-worn cameras and drones. All of these innovations have greatly influenced policing methods.

The next surge of technology in law enforcement, artificial intelligence (AI), will further reshape policing. According to an article for *Technology Review*, AI is “an evolving constellation of technologies that enable computers to simulate elements of human thinking—learning and reasoning among them.”² Such human thinking and learning, incorporated into the right forms of technology, will allow law enforcement agencies to make advances in crime-solving and prevention. Agencies can incorporate AI into their organizations to solve crimes, but they can also evolve and adapt this new technology to streamline processes, prevent crimes, and find new methods and emerging practices for which AI can be applied.

Foreign law enforcement agencies have already started using AI. The Dubai Police has embraced AI and made a concerted effort to take its police force into the future; the Dubai Police is at least ten years ahead of the rest of the world when it comes to AI technology, and its initiatives could be used as the foundation for AI in law enforcement in the United States.³ For example, in 2017, the Dubai Police introduced the first robot

¹ Police Executive Research Forum, *How Are Innovations in Technology Transforming Policing?* (Washington, DC: Police Executive Research Forum, January 2012), 21.

² Nanette Byrnes, “AI Hits the Mainstream,” *Technology Review* 119, no. 3 (May/June 2016): 62–63, <http://libproxy.nps.edu/login?url=https://search.proquest.com/docview/1789800161?accountid=12702>.

³ Amira Agarib, “Dubai Police Unveil Artificial Intelligence Projects, Smart Tech,” *TCA Regional News*, March 12, 2018, [/search.proquest.com/docview/2013073444/citation/935878B9D5A44325PQ/1](https://search.proquest.com/docview/2013073444/citation/935878B9D5A44325PQ/1).

officer into its department. The robot allows citizens to report crimes, pay fines, and receive information by touchscreen.⁴ The robot also allows the police force to broadcast incidents in real time by live streaming events to a command center.⁵ With this technology, many police functions will begin to be automated and the future of law enforcement in Dubai will take shape.

This research explores how AI can be successfully incorporated into a U.S. law enforcement agency by focusing on AI's challenges and limitations. Some of those challenges include a lack of current information about AI in this setting, particularly in the United States, and legal considerations. This thesis examines how the Dubai Police have implemented AI, compares U.S. law enforcement approaches to AI with those of foreign agencies, and ultimately creates a model framework that law enforcement agencies in the United States can use to incorporate AI into their practices.

⁴ Rory Cellan-Jones, "Dubai Police Unveil Robot Officer," BBC, May 24, 2017, <https://www.bbc.com/news/technology-40026940>.

⁵ Cellan-Jones.

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I. ARTIFICIAL INTELLIGENCE IN LAW ENFORCEMENT

AI will be the best or worst thing ever for humanity.

—Elon Musk¹

This thesis asks the question: How can artificial intelligence (AI) be incorporated into law enforcement in the United States based on domestic experiences and best practices from Dubai, with fair-minded consideration of challenges, in an effort to provide a model for implementation?

A. LITERATURE REVIEW

This literature review focuses on the scholarly works that discuss AI as it is currently used in law enforcement both in the United States and in foreign countries: its limited uses and promises, its drawbacks, and the constraints that regulation would place on using AI in a law enforcement setting. At present, according to Daniel Faggella, information about AI in law enforcement centers on the idea that it “currently exists, is proven to work, and expected to continue to expand.”² At the same time, Faggella warns that AI’s usefulness has not yet been proven regarding “predicting crimes or an individual’s likelihood for committing a crime.”³ In his master’s thesis, “Crime Intelligence 2.0,” Sanket Subhash Khanwalkar points out that issues such as consistency, maintenance, and cleaning of data have not been addressed when it comes to using AI.⁴ Other unknowns include information about the implementation process, availability, costs, and overall acceptance by the public and law enforcement agencies.

¹ Catherine Clifford, “9 of the Most Jaw-Dropping Things Elon Musk said about Robots and AI in 2017,” CNBC, December 18, 2017, <https://www.cnbc.com/2017/12/18/9-mind-blowing-things-elon-musk-said-about-robots-and-ai-in-2017.html>.

² Daniel Faggella, “AI for Crime Prevention and Detection—5 Current Applications,” *TechEmergence*, November 13, 2017, <https://www.techemergence.com/ai-crime-prevention-5-current-applications/>.

³ Faggella.

⁴ Sanket Subhash Khanwalkar, “Crime Intelligence 2.0: Reinforcing Crowdsourcing Using Artificial Intelligence and Mobile Computing” (master’s thesis, University of California-Irvine, 2016), 84, <http://www.escholarship.org/uc/item/6965r2v6>.

1. On the Evolution of AI: U.S. Law Enforcement Agencies

AI in U.S. law enforcement is new; it may take many years before AI for U.S. agencies reaches the level of sophistication experienced among foreign law enforcement agencies today. Because AI is a new technology in law enforcement, the literature on AI is less robust than it is for other technologies employed by U.S. law enforcement, such as body-worn cameras. As Suhaib Alzou'bi and his coauthors note, AI is such a new concept that even foreign agencies that are using AI are highly protective of their progress and security of information.⁵ For U.S. agencies to learn from foreign entities, data must be shared and the veil of secrecy surrounding the use of AI must be lifted.

Faggella mentions that AI has been introduced into law enforcement in the United States but, echoing Alzou'bi et al., its application has been limited. For example, an AI program called ShotSpotter alerts law enforcement officers in real time when gunfire is heard: “sound sensors pick up the sound of a gunshot and their machine learning algorithm triangulates where the shot happened by comparing data.”⁶ Another product, called Cortica, looks for behavior patterns that can help determine if a human motion is threatening or nonthreatening.⁷ In Faggella’s view, the software is “‘unsupervised’ and can ‘comb through’ real-time footage from both surveillance cameras and drones in order to search for and alert law enforcement or town officials of detected criminal patterns.”⁸ Cortica uses AI to learn human behaviors; law enforcement only needs to insert key phrases or images into a searchable database, which then provides possible matches. These applications of AI are relatively new in law enforcement and therefore many questions are still to be answered, particularly questions about privacy.

An article in the *Journal of Robotics & Machine Learning* substantially supports claims that AI has limited application for law enforcement. The article notes, however, that

⁵ Suhaib Alzou'bi, Haitham Alshibl, and Mohammad Al-Ma'aitah, “Artificial Intelligence in Law Enforcement: A Review,” *International Journal of Advanced Information Technology* 4, no. 4 (2014): 1.

⁶ Faggella, “AI for Crime Prevention and Detection.”

⁷ Faggella.

⁸ Faggella.

Axon, the leading manufacturer of body-worn cameras, recently created a training center focused on AI-supported technologies, which conceivably would spread the use of AI.⁹ The training center’s goal is to provide stakeholders, such as law enforcement agencies, the opportunity to be involved in creating, learning, and supporting the use of AI. Axon plans to develop “a range of future capabilities to help increase police efficiency and efficacy, including software to enable vehicle, speech, and critical event recognition.”¹⁰ Currently, Axon’s body-worn cameras record audio and video of police and citizen encounters. Advancing AI into this technology could relieve police officers from writing reports: instead, AI could translate footage from the body-worn camera and transcribe the data into a police report. The time that police officers spend writing reports could be redirected to other activities such as community engagement.

A common theme noted in the literature about AI is its current lack of regulation. Kay Firth-Butterfield argues that AI should be regulated to provide protection; although regulation may deter creativity, it would ensure a sense of security.¹¹ Firth-Butterfield posits that it may take time for regulations to catch up to the technology.¹² This may best explain why U.S. law enforcement agencies have yet to implement this technology. Law enforcement relies heavily on the legislation that governs its decision-making processes, but such regulation may be a barrier in the United States. Foreign law enforcement agencies may operate in less restrictive environments, which may account for their faster adoption of AI technology.

As AI evolves in the United States, the bulk of related legislation will come from judicial decision-making that occurs after the technology is used improperly.¹³ Firth-

⁹ “Axon Announces First CJI-Compliant Artificial Intelligence Training Center,” *Journal of Robotics & Machine Learning* (June 4, 2018): 11, <https://search.proquest.com/docview/2047388156/citation/E6B2205FC5624063PQ/1>.

¹⁰ “Axon Announces Artificial Intelligence Training Center.”

¹¹ Kay Firth-Butterfield, “Artificial Intelligence and the Law: More Questions than Answers?” *Scitech Lawyer* 14, no. 1 (Fall 2017): 28–31, <https://search.proquest.com/docview/2043223566/abstract/3F377844C0984E93PQ/1>.

¹² Firth-Butterfield, 4.

¹³ Firth-Butterfield.

Butterfield cautions that “those who attempt to forecast the future have three chances: to be wrong, to be right, or to be partially right.”¹⁴ Law enforcement agencies in the United States may wait to embark on AI technologies so that if they are wrong, or partially right, they can mitigate their liability and judicial exposure. Elizabeth Joh, writing for the *UC Davis Law Review*, explains that a possible future of AI in law enforcement could include robots armed with weapons who are capable of acting on data they have processed.¹⁵ This concept raises questions about what legal doctrines would need to be in place to ensure that the machine learning technology is making decisions properly. Human-robot interactions raise many questions, as well, that law enforcement in the United States will have to consider.

As AI technology evolves in the United States, human rights, which are ingrained in American culture, must be considered. When nonhuman entities take on the characteristics of humans, the interactions will need to be moral and considerate of human rights. It is difficult to produce guidance on this topic, however, because there is little information about it. This may be another barrier to U.S. law enforcement’s use of AI in the United States—one that could be the most damaging should abuse occur. Hutan Ashrafian contends that concern should also focus on interactions between nonhuman entities and AI technology to ensure abuse and mistreatment does not occur.¹⁶

The research on AI in the United States also looks to capitalize on decision-making procedures. For example, Aaron Chalfin et. al encourage the use of AI for applications not related to enforcement efforts, such as hiring law enforcement officers.¹⁷ They maintain that AI could encourage productivity and efficiency in hiring practices, and it could also reduce use-of-force scenarios and improve police-citizen relationships.¹⁸ Creating an

¹⁴ Firth-Butterfield, 5.

¹⁵ Elizabeth E. Joh, “‘A Certain Dangerous Engine’: Private Security Robots, Artificial Intelligence, and Deadly Force,” *UC Davis Law Review* (October 5, 2017), <https://ssrn.com/abstract=3048394>.

¹⁶ Hutan Ashrafian, “AIonAI: A Humanitarian Law of Artificial Intelligence and Robotics,” *Science and Engineering* 21, no. 1 (February 2015): 39, <http://dx.doi.org/10.1007/s11948-013-9513-9>.

¹⁷ Aaron Chalfin et al., “Productivity and Selection of Human Capital with Machine Learning,” *The American Economic Review* 106, no. 5 (May 2016): 124, <http://dx.doi.org/10.1257/aer.p20161029>.

¹⁸ Chalfin et al., 126.

algorithm that could predict officers' behavior before they are hired would accomplish this goal. By reviewing key personality traits of current officers, the algorithm could create an optimal candidate choice, eliminating candidates who show negative traits that lead to citizen complaints and unlawful use-of-force incidents.

Law enforcement's ability to easily combine future technologies, specifically intelligence-led policing driven by AI, will be a key factor in AI's success. As with current forms of intelligence-led policing, Lonnie Schaible and James Sheffield mention varying levels of innovation accompanying the use of AI, and future implementation will need to use an evidence-based approach to be successful.¹⁹ As more agencies look to future technologies, the path to implementation needs to be paved with thoughtful conversation.

2. Foreign Law Enforcement Agencies

The literature reveals that AI in foreign law enforcement agencies is more advanced than in the United States and represents what many agencies in the United States aspire to achieve. For example, Amira Agarib indicates that the Dubai Police Force has introduced AI projects into its agency and wants to be at least ten years ahead of any other law enforcement agency in the world when it comes to this technology.²⁰ Some of the projects the Dubai Police are working on that incorporate AI include:

- Passenger fine/debt payments at airports through interactive voice response
- Zephyr, a high-altitude pseudo satellite
- Smart military suits
- Self-driving motorcycle money transfer service for prison inmates

¹⁹ Lonnie M. Schaible and James Sheffield, "Intelligence-Led Policing and Change in State Law Enforcement Agencies," *Policing: An International Journal of Police Strategies & Management* 35, no. 4 (2012): 781, <https://doi.org/10.1108/13639511211275643>.

²⁰ Amira Agarib, "Dubai Police Unveil Artificial Intelligence Projects, Smart Tech," *TCA Regional News*, March 12, 2018, <https://search.proquest.com/docview/2013073444/citation/935878B9D5A44325PQ/1>.

- Chatbots
- Customer service robots
- Smart security patrol system
- Virtual smartphone plugin
- Smart hand clock for emergency situations
- 3D printer
- AI clinic²¹

In China, law enforcement officers are embracing AI technology as well. James Vincent explains that Chinese police use facial recognition sunglasses to scan the crowd for threats in busy, populated areas, such as train stations, and the glasses have helped locate several suspects and identify travelers using false identities.²² The ability to identify individuals who pose threats before they are able to carry out their plans is an undeniable benefit of facial recognition technology. James Vincent notes, too, that the use of facial recognition software is greatly enhanced with a broader and more comprehensive database, and China is working toward installing 600 million active cameras to collect images in the next few years.²³ Vincent quotes Wu Fei, the chief executive of the company that produces the glasses, as saying that the glasses give police “the ability to check anywhere.... By making wearable glasses, with AI on the front end, you get instant and accurate feedback.”²⁴ As Chinese police scan a location with facial recognition sunglasses, the images are then uploaded to a database containing previously captured images, and the

²¹ Agarib.

²² James Vincent, “Chinese Police Are Using Facial Recognition Sunglasses to Track Citizens,” *The Verge*, February 8, 2018, <https://www.theverge.com/2018/2/8/16990030/china-facial-recognition-sunglasses-surveillance>.

²³ Vincent.

²⁴ Vincent.

officer is notified if there is a match. Of course, China does not face the same privacy concerns as the United States.

China has also started to introduce facial recognition into fast food restaurants. Amy Hawkins explains in *The Guardian* how facial recognition software is now being used at a KFC restaurant to predict customers' orders based on their facial expressions.²⁵ Hawkins expresses that this offers a convenient method of ordering for the customer, and that "the artificial intelligence-enabled system can recommend menu items based on a customer's estimated age and mood."²⁶ She explains that customers' attitudes toward this technology and its privacy implications are markedly different from attitudes in the United States:

Of course, the prospect of a company storing data about customers' faces and fried-chicken preferences raises the ever-present trade-off between convenience and privacy. One woman tells me she wouldn't use the machine for that reason, but most customers are nonplussed. In China, you don't have any privacy anyway.²⁷

Thus, implementation of AI in foreign law enforcement agencies may be less controversial since it is embedded in the everyday routines of citizens who live in those countries.

The research also suggests that there may be a barrier to gathering data on foreign law enforcement's use of AI. As Alzou'bi et al. conclude from research conducted in Jordan, information should be shared with colleagues at professional conferences; support is needed from academic institutions, and evaluation methods need to be implemented expeditiously if other entities are going to benefit from AI.²⁸ The success of U.S. law enforcement agencies will depend upon a thorough analysis of current implementation models, but secrecy and protective measures will hinder the process.

²⁵ Amy Hawkins, "KFC China Is Using Facial Recognition Tech to Serve Customers: But Are They Buying It?" *Guardian*, January 11, 2017, <https://www.theguardian.com/technology/2017/jan/11/china-beijing-first-smart-restaurant-kfc-facial-recognition>.

²⁶ Hawkins.

²⁷ Hawkins.

²⁸ Alzou'bi, Alshibl, and Al-Ma'aitah, "Artificial Intelligence in Law Enforcement," 7.

Contrary to research conducted in Jordan, India has looked to advance discussions about how to capitalize on AI.²⁹ Perna Sharma outlines India's views of AI, among which are ensuring that data collected through AI mechanisms is transparent.³⁰ Sharma states that India emphasizes "data fiduciary," which refers to the practice of encouraging safeguards are in place for both collecting and using data. In India, people can choose to opt in or out of sharing their data.³¹ If law enforcement agencies in foreign countries discuss AI and forward-thinking policies such as these, such discussions can be a model for U.S. law enforcement when introducing AI initiatives.³²

B. RESEARCH DESIGN

The research design for this thesis is qualitative and provides insight into AI in both U.S. and foreign law enforcement agencies. An overview of AI is provided to establish a baseline for understanding the capabilities, mechanisms, and overall concept. The research design features case studies in the use of AI in both domestic and foreign law enforcement agencies. Paul Leedy and Jeanne Ellis Ormrod argue that "a case study may be especially suitable for learning more about a little known or poorly understood situation" and that "researchers study two or more cases to make comparisons, build theory, or propose generalizations."³³ The foreign case study focuses on the Dubai Police Force and was chosen because this agency is currently implementing AI technology across many police functions and appears to have embraced the future of policing. This agency also provides a completely different perspective from U.S. law enforcement agencies, where privacy and constitutional constraints guide technological initiatives.

²⁹ Perna Sharma, "The Ascent of Artificial Intelligence: How Will AI Change the Nation-State?" *Up Front* (blog), July 17, 2018, <https://www.brookings.edu/blog/up-front/2018/07/17/the-ascent-of-artificial-intelligence-how-will-ai-change-the-nation-state/>.

³⁰ Sharma.

³¹ Sharma.

³² Vasant Dhar, "Who Controls Your Data? India May Pass a Law Ensuring that You Do," *Washington Post*, September 25, 2018, <https://www.washingtonpost.com/news/monkey-cage/wp/2018/09/25/who-controls-your-data-india-may-pass-a-law-ensuring-that-you-do/>.

³³ Paul D. Leedy and Jeanne Ellis Ormrod, *Practical Research: Planning and Design* (New York, NY: Pearson, 2019), 231.

To best answer the research question about how to provide a model for implementation in U.S. law enforcement agencies, current uses of AI are compared and contrasted. A review of the existing academic literature is included to analyze the issues that have surrounded the use of AI technology in each case study country. Reviewing the technology that is currently in use allows for further research that will help determine the best methods, or best practices, for implementation.

The primary data source is the literature, including reports generated by law enforcement agencies that have been made public and media accounts of AI technology. Social media is also included as a data source and content analysis is conducted as it relates to public perception when AI is used by law enforcement agencies. Social media is explored as well to provide a snapshot into privacy. The narrative inquiry that social media provides allows the research to look past perception and also provides a mechanism with which to explore future experiences.³⁴ Including the social narrative of AI use also helps explain its evolution, but avoids exacerbating concerns relayed by the public. Reviewing social media posts can help other agencies learn how to create and communicate their narrative successfully. Legal considerations are also discussed, to include privacy concerns and guiding principles related to AI, and case examples are given to illustrate these concerns.

Art Murray and Nola Joyce's article "The Future of Law Enforcement" explores the realization that "many think the world is moving ever-closer to that so-called 'singularity' in which machine intelligence exceeds that of humans."³⁵ This may be a daunting thought, but one that should be researched and embraced. In this context, the limitations of the research center on the need to recognize the importance of privacy concerns when implementing AI technology while highlighting its value to help prevent, solve, and combat crime for law enforcement agencies. Other considerations to focus on include the concerns of stakeholders, such as the community, and law enforcement officers

³⁴ Leedy and Ormrod, 235.

³⁵ Art Murray and Nola Joyce, "The Future of Law Enforcement," *KM World* 16, no. 4 (April 2017), <http://www.kmworld.com/Articles/Column/The-Future-of-the-Future/The-future-of-law-enforcement-117206.aspx>.

in the field and their support staff, and how AI will have an impact on the adjudication process. This research hopes to build the foundation for U.S. law enforcement agencies that may be looking to implement AI technology and provide a template for future research.

C. CHAPTER OUTLINE

Chapter II provides background information about AI in U.S. law enforcement by giving an overview of the technology and how it is currently being used. Legal considerations are also discussed. Chapter III presents a case study of the Dubai Police Force's use of AI, and Chapter IV provides a comparative analysis between U.S. law enforcement and the Dubai Police Force. Chapter IV concludes with recommendations that provide guidance on an implementation model for law enforcement agencies that wish to begin using AI. It includes best practices and applications along with recommendations for future research. AI is an emerging technology in U.S. law enforcement and, as such, agencies that embark on the AI path will need a roadmap that can be followed. This thesis aspires to be that roadmap.

II. BACKGROUND AND LEGAL CONSIDERATIONS OF ARTIFICIAL INTELLIGENCE IN U.S. LAW ENFORCEMENT AGENCIES

AI is a fundamental risk to the existence of human civilization in a way that car accidents, airplane crashes, faulty drugs or bad food were not—they were harmful to a set of individuals within society, of course, but they were not harmful to society as a whole.

—Elon Musk³⁶

Imagine a world where every decision a law enforcement officer makes is accurate, justified, and legally correct. An example of how technology in the future could affect law enforcement has been dramatized in movies such as the 1987 *RoboCop*, with the tag line “Part man. Part machine. All cop. The future of law enforcement.”³⁷ This fictional account of AI is now a not-too-far reality; however, as in the movie, what if AI does not adhere to its intended use? As this technology emerges, its data collection capability—and also its ability to make decisions based on that data—presents many questions. What should happen if the human element of policing, which involves decision-making, analytical thinking, and discretion, is led by AI? What will happen if AI surpasses human capability? These can be daunting thoughts.

AI is defined as “an evolving constellation of technologies that enable computers to simulate elements of human thinking—learning and reasoning among them.”³⁸ AI encompasses technologies that help humans make decisions, increase situational awareness and efficiencies, and improve responses to incidents. AI is a relatively new tool in law enforcement and, as Appollo Kowalyk advises, “it would be wise to make note of Amara’s Law: we tend to overestimate the impact of a technology in the short run, but we

³⁶ Clifford, “9 Things Elon Musk said in 2017.”

³⁷ “RoboCop (1987),” IMDb, accessed June 10, 2018, <https://www.imdb.com/title/tt0093870/>.

³⁸ Nanette Byrnes, “AI Hits the Mainstream,” *Technology Review* 119, no. 3 (May/June 2016): 62–63, <http://libproxy.nps.edu/login?url=https://search.proquest.com/docview/1789800161?accountid=12702>.

underestimate it in the long run.”³⁹ For law enforcement agencies, *RoboCop* is not a distant reality; and in contrast to Amara’s Law, the short-term impact of AI should not be underestimated. AI has affected law enforcement despite the fact, as Charles notes, that “law enforcement has long been interested in intelligence, although not necessarily artificial intelligence.”⁴⁰

As law enforcement agencies move forward in technological ventures, it may be beneficial to think differently: to “let machines do what machines do well, and let humans do what humans do well ... [by] working together instead of in opposition, we can create an amazing future.”⁴¹ AI technology is in the infancy stage; it has much growing to do, and the future of AI in law enforcement will be shaped by the decisions that are made by agencies that decide to venture into this unknown arena. AI is reshaping how policing is carried out, and AI technology currently in use in the United States has started to influence policy and will have a major role in creating the future of policing.

This chapter gives an overview of AI, including U.S. law enforcement agencies’ current capabilities and the legal considerations of this technology, starting with privacy concerns and then covering guiding principles in use today. Case examples illustrate the nuances of the legal considerations. Balancing this technology’s use with legal considerations is vital as AI approaches the point of singularity. Our considerations today about the use of AI technology must be increasingly careful and sophisticated as AI evolves and becomes more prevalent in law enforcement agencies. This chapter provides a summary of AI’s current status in the United States and lessons about where AI will likely be in the future.

³⁹ Apollo Kowalyk, “Better Days Ahead—Artificial Intelligence, Machine Learning, and the Quest for the Holy Grail of Analytics,” *Police Chief Magazine* (April 2019): 27.

⁴⁰ J. Charles, “AI and Law Enforcement,” *Intelligent Systems and Their Applications* 13, no. 1 (1998): 77, <https://doi.org/10.1109/5254.653229>.

⁴¹ Murray and Joyce, “The Future of Law Enforcement.”

A. ARTIFICIAL INTELLIGENCE IN U. S. LAW ENFORCEMENT

In 2011, the Police Executive Research Forum conducted a survey of more than seventy agencies, ranging in size from 10 to 13,088 officers (with an average of 949 officers), that provided information about technology within the agencies.⁴² The survey demonstrated that many of the responding agencies use a variety of technologies. As depicted in Figure 1, this survey left out AI as a specific category, though predictive policing and license plate readers do incorporate AI.

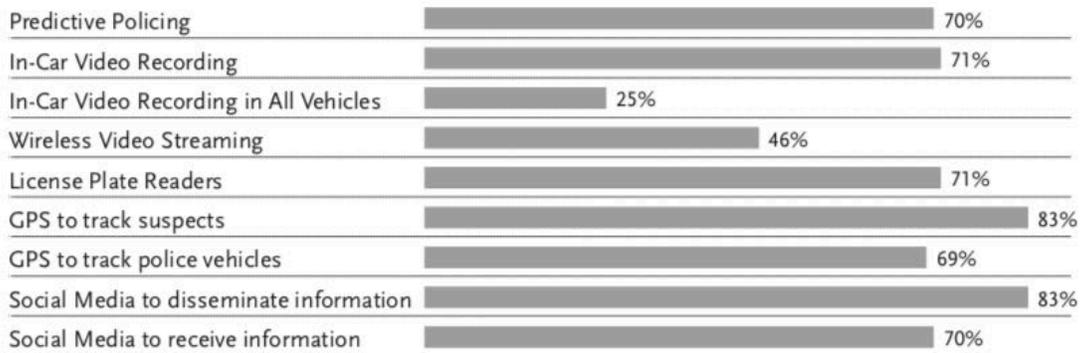


Figure 1. Technologies Used by Law Enforcement Agencies⁴³

Perhaps misleadingly, the use of AI calls for more capable—not less capable—police officers. For example, an article titled “As Tech Changes Law Enforcement, its Workforce Must Adapt” highlights the need for law enforcement officers to be analytical problem-solvers.⁴⁴ Furthermore, it warns that employing AI technology itself may degrade police officers’ “ability to interact with people,” which is vital to police work.⁴⁵ Nonetheless, technology will continue to be integrated into police operations, and law enforcement agencies need to embrace this reality. Sixty-two percent of those in law

⁴² Police Executive Research Forum, *Innovations in Technology*, 21.

⁴³ Source: Police Executive Research Forum, 21.

⁴⁴ Theo Douglas, “Report: As Tech Changes Law Enforcement, its Workforce Must Adapt,” *Government Technology*, October 16, 2018, <http://www.govtech.com/public-safety/Report-As-Tech-Changes-Law-Enforcement-Its-Workforce-Must-Adapt.html>.

⁴⁵ Douglas.

enforcement believe technology, specifically AI, will have a positive impact on the profession.⁴⁶ Given this faith in AI's utility, the profession must take care to use it in a responsible, legal manner.

As technology continues to advance law enforcement practices, the balance between privacy and safety for individuals should always be considered. Respecting citizens' right to privacy is key to gaining trust in a community, but citizen safety is equally important. Any technology that leverages AI to ensure safety should be explored. Although AI is part of the new frontier in policing, AI technologies that are currently in use should be examined to shape further technologies. Current technologies include facial recognition, body-worn cameras, predictive policing software, and license plate readers.

1. Facial Recognition and Body-Worn Cameras

Facial recognition technology, simply stated, recognizes a person's face by its unique characteristics such as a smile, frown, or a visible emotion. According to "The Ultimate Guide to Face Recognition," "facial recognition is a biometric identification system that is developed for identifying or verifying a person by comparing and analyzing patterns based on the person's stored records."⁴⁷ Biometric identification involves the analysis of unique characteristics such as fingerprints, voice, DNA, or—in the case of facial recognition—a face. The key to facial recognition is capturing data effectively and accurately and then having access to an abundance of stored images for comparison. Although facial recognition has been explored for many years, 2001 marked the first time faces could be recognized in real time.⁴⁸ Real-time detection of a face has greatly enhanced the power of this type of technology. The ability to capture a face, extract data from that face, compare the data to images of other faces, and make a match has led to an exciting and complicated discussion. And the whole process depends on AI.

⁴⁶ James Slessor and Natalie Louise Cassidy, "Reimagining the Police Workforce: Future Vision" (report, Accenture, September 26, 2018), <https://www.accenture.com/us-en/insights/public-service/reimagining-police-workforce-future-vision>.

⁴⁷ Julia Matyunina, "The Ultimate Guide to Face Recognition," CodeTiburon, October 12, 2017, <https://codetiburon.com/ultimate-guide-to-face-recognition/>.

⁴⁸ Matyunina.

The facial recognition process, as depicted in Figure 2, happens quickly; a computer algorithm’s ability to decide “whether the face’s features of a new sample are matching with the one from a facial database or not ... usually takes just seconds.” This may be a frightening thought, especially in an era of privacy concerns.⁴⁹

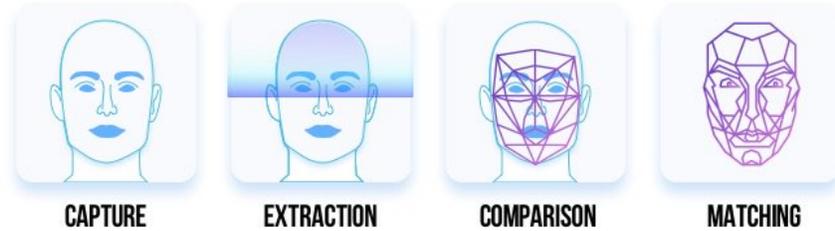


Figure 2. How Facial Recognition Works⁵⁰

Regardless, facial recognition has become commonplace for anyone who looks at their smartphone to unlock it. This new feature provides a simplistic yet futuristic view of the applications of facial recognition. Apple’s iPhone facial recognition system allows for users to create representations of themselves with accuracy, in real time, that show realistic expressions. To develop this technology, Apple “produced a proof of concept ... that could dramatically lower the cost to make digital characters look more alive and expressive in a wide range of content, including VR [virtual reality] and AR [augmented reality] software.”⁵¹ When used appropriately, facial recognition can profoundly simplify everyday activities. Incorporating virtual reality technology will allow for a realistic environment and augmented reality will enhance this environment with real-life sensory experiences. Facial recognition is here to stay, and as it continues to expand into many

⁴⁹ “Pros & Cons of Facial Recognition Technology,” Riverside Technologies, Inc., September 13, 2018, <https://www.lrti.com/pros-cons-of-facial-recognition-technology/>.

⁵⁰ Source: “Facial Recognition with Python,” GLUG MVIT, accessed October 28, 2019, <https://blog.glugmvit.com/face-recognition/>.

⁵¹ Ian Hamilton, “iPhone X Facial Recognition Will Revolutionize VR/AR Development,” UploadVR, November 6, 2017, <https://uploadvr.com/iphone-x-face-recognition-development-strassburger/>.

arenas, law enforcement will need to evolve with it. Facial recognition can provide the peace of mind of knowing one's identity is secure, and the applications for law enforcement can provide peace of mind for a community as long as the identification match is accurate.

While China has introduced facial recognition technology into its police force with great success, concerns may emerge as U.S. law enforcement embraces facial recognition. At a beer festival, China made a concerted effort to use facial recognition to identify wanted criminals who should not be allowed to enter the festival; during the event, twenty-five people who were wanted for a variety of crimes were arrested, including one individual who had evaded law enforcement for almost ten years.⁵² As noted previously, citizens in China do not have the same privacy expectations as citizens in the United States because the government has sweeping powers. However, examining the benefits of China's AI implementation allows U.S. law enforcement to consider its advantages. Current technology in policing raises a nagging question: How much privacy will citizens willingly surrender to have a safe community?

Some U.S. citizens and lawmakers do not readily accept the use of facial recognition. For example, the city of San Francisco banned the use of facial recognition software by its law enforcement agency in May 2019.⁵³ Such action in the tech-savvy heart of our country creates a chilling effect surrounding a technology that can help identify criminals. The sponsor of the legislation, Aaron Peskin, believes that because San Francisco is considered a technology hub, it also has a responsibility to ensure that technology is used responsibly.⁵⁴ If such a bellwether city has banned facial recognition technology, smaller cities and especially those that have not embraced technology more generally will most likely follow suit. The complete removal of this technology from a law enforcement environment, though, could have dire consequences. If an incident occurs

⁵² Cecile Borkhataria, "Facial Recognition Detects 25 Wanted Criminals at China Beer Festival," *Daily Mail*, September 4, 2017, <http://www.dailymail.co.uk/~/article-4851564/index.html>.

⁵³ Kate Conger, Richard Fausset, and Serge F. Kovalski, "San Francisco Bans Facial Recognition Technology," *New York Times*, May 14, 2019, <https://www.nytimes.com/2019/05/14/us/facial-recognition-ban-san-francisco.html>.

⁵⁴ Conger, Fausset, and Kovalski.

where this technology could have solved a crime and saved lives, will the ban continue to make sense?

Despite concerns, facial recognition technology is in use by the Federal Bureau of Investigation (FBI) for a program called Next Generation Identification (NGI). NGI “provides the criminal justice community with the world’s largest and most efficient electronic repository of biometric and criminal history information.”⁵⁵ A component of NGI is the ability to perform facial recognition searches and, according to the FBI, the software allows for law enforcement agencies to submit a photograph to be compared to over 30 million images.⁵⁶ Table 1, made available by the FBI, shows how often this software has been used. As noted, in 2019 more than 48,000 images were submitted for a facial recognition search.

Table 1. Facial Recognition Search Tallies⁵⁷

Facial Recognition Search (FRS):		
Category:	May 2019 Totals:	May 2018 Totals:
Current Month Receipts	839	1,853
Current Month Processed	839	1,816
Total Receipts To Date	11,036	43,102
Total Processed To Date	11,011	39,764
Completed within 2 hours	95.59%	95.81%
Current Month Average Response Time	12 mins 52 secs	28 mins 38 secs
	Fiscal Year 2019 Totals:	Fiscal Year 2018 Totals:
FY Total Receipts	11,036	52,225
FY Total Processed	11,011	48,880
FY % Completed within 2 hours	96.52%	98.89%
Fiscal Year Average Response Time	33 mins 48 secs	17 mins 41 secs

Facial recognition software enabled by AI is also entering into the body-worn camera (BWC) arena. BWCs are a thing of the past in comparison to emerging technologies like AI. However, the ability to incorporate facial recognition software into BWCs presents a new challenge. As officers respond to incidents and interact with victims, witnesses, and

⁵⁵ “Next Generation Identification (NGI),” FBI, May 6, 2016, <https://www.fbi.gov/services/cjis/fingerprints-and-other-biometrics/ngi>.

⁵⁶ FBI.

⁵⁷ Source: “September 2019 Next Generation Identification (NGI) System Fact Sheet,” FBI, accessed October 28, 2019, <https://www.fbi.gov/file-repository/ngi-monthly-fact-sheet/view>.

bystanders, their BWCs are continually collecting data, including about the faces they encounter. When these individuals later learn that their faces—along with any unique identifiers—have been entered into a national database that can be accessed by law enforcement across the country to identify suspects, they may howl in protest. A letter sent to the AI Ethics Board at Axon (the lead manufacturer of BWCs) by organizations concerned with privacy captures the spirit of that public outcry. It stresses, “Axon has a responsibility to ensure that its present and future products, including AI-based products, don’t drive unfair or unethical outcomes or amplify racial inequities in policing.”⁵⁸ Undoubtedly, this responsibility may not be enough to overcome the damaging effects of false identification, profiling, or misuse. As such, detractors warn that when this technology is deployed by a government entity, careful consideration should be given to privacy and mitigating liability.

AI has provided the ability to mine vast amounts of information in a very short period of time; but how accurate is it? “The Ultimate Guide to Face Recognition” highlights concerns with the accuracy of facial recognition, specifically the unlocking mechanism on the Samsung’s smartphone Galaxy Note 8, which can be circumvented with a photograph.⁵⁹ When a face is essentially stolen, the technology becomes useless if not harmful.

Concerns about inaccurate identification are alarming, but so are concerns about the technology’s ability to eventually identify everyone. For example, Axon is collecting and storing data from BWCs in the interest of developing facial recognition and AI.⁶⁰ This action will allow Axon, a private company, to build a database of faces that law enforcement could have access to. Imagine all the BWCs that are in use today, and then imagine all of the facial images that could be captured and later used to enable identification. To rights advocates, such power comes with peril. But to law enforcement

⁵⁸ Wendy N. Davis, “Facial Recognition Technology Helps Nab Criminals—And Raises Privacy Concerns,” *ABA Journal*, October 1, 2017, http://www.abajournal.com/magazine/article/facial_recognition_technology_crime_privacy.

⁵⁹ Matyunina, “The Ultimate Guide to Face Recognition.”

⁶⁰ Davis, “Facial Recognition Technology Helps Nab Criminals.”

it holds great promise. According to Wendy Davis, the concern is that innocent people will be falsely identified leading to their unjustified arrest.⁶¹ But with expanded use in law enforcement agencies, being able to identify a suspect in a crime through the data mining made possible by AI makes criminal investigations considerably swifter. The technology will undoubtedly deter individuals from committing offenses, especially when they believe that they could be identified through facial recognition.

Considering the facial recognition technology embedded in the cameras, communities will need to decide if their law enforcement agencies should continue to use BWCs. William H. Sousa, Terrance D. Miethe, and Mari Sakiyama administered an online survey to the public in May 2015 and found that 85 percent of respondents wanted police officers to wear BWCs.⁶² The survey also looked at the public's perception of the potential advantages and consequences of implementing BWCs, as illustrated in Figures 3 and 4. The survey revealed that the top advantage to an agency having BWCs is the improved transparency that comes with a visual record of an incident, and the top concern is that BWCs deter witnesses from speaking to law enforcement for fear of a permanent record of their statement.

⁶¹ Davis.

⁶² William H. Sousa, Terance D. Miethe, and Mari Sakiyama, "Body Worn Cameras on Police: Results from a National Survey of Public Attitudes" (research brief, UNLV Center for Crime and Justice Policy, July 2015), 1, https://www.unlv.edu/sites/default/files/page_files/27/BodyWornCameras.pdf.

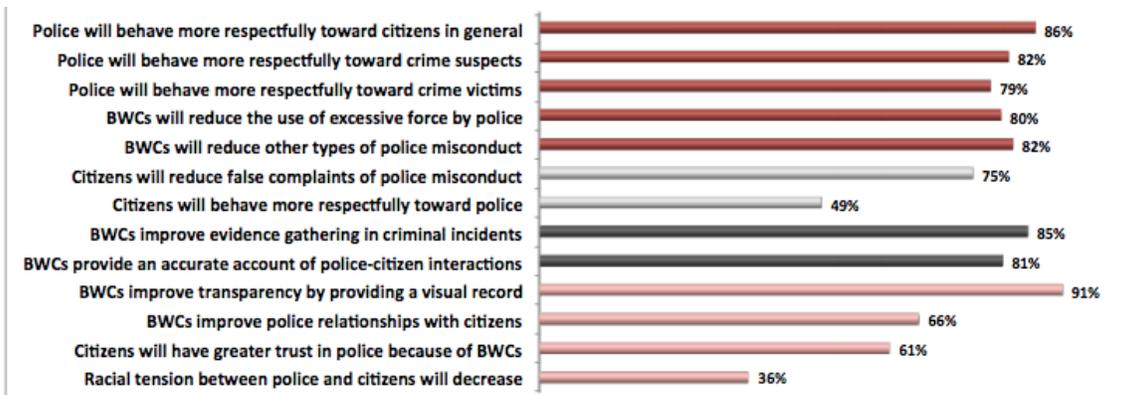


Figure 3. Potential BWC Advantages (Percent Who “Agree” or “Strongly Agree”)⁶³

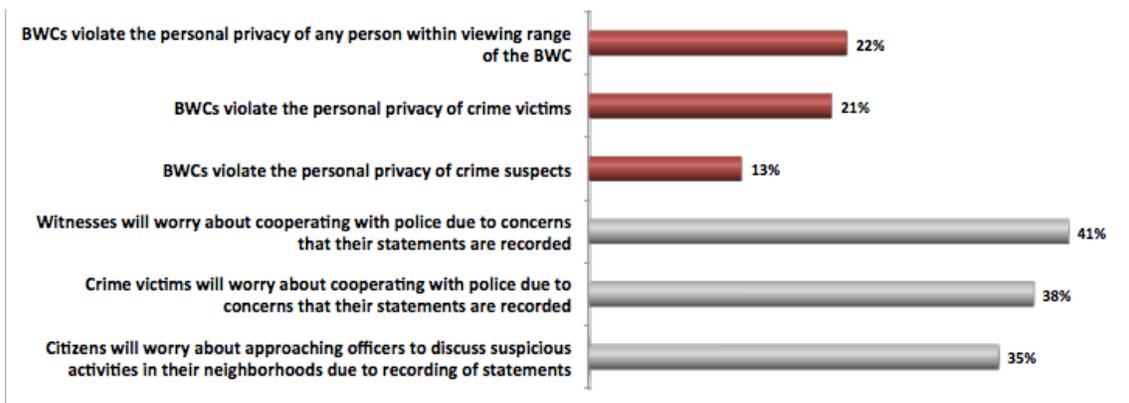


Figure 4. Potential BWC Consequences (Percent Who “Agree” or “Strongly Agree”)⁶⁴

As noted in the survey results, despite overwhelming support for the use of BWCs by law enforcement, people have concerns about potential misuse. As BWCs have become a recognizable part of law enforcement, they may “hurt police-community relations by excessively recording police-citizen interactions, making citizens—particularly those in high-crime neighborhoods where retaliation for speaking to police is a tangible threat—less willing to share critical information with the police,” a sentiment that should not be

⁶³ Source: Sousa, Miethe, and Sakiyama, 2.

⁶⁴ Sousa, Miethe, and Sakiyama, 3.

taken lightly.⁶⁵ BWC technology changes expectations about how officers should behave, handle a situation, or communicate because of constant scrutiny. Law enforcement agencies will need to weigh the competing concerns and benefits and make informed decisions about what their community expects and how agencies will meet those expectations.

Capturing faces without individuals' awareness has also been discussed as it relates to the Fourth Amendment, which protects U.S. citizens from unlawful and unreasonable searches and seizures.⁶⁶ One of the main concerns is that, as more cameras are used in our society, more facial images are captured; if an entity like law enforcement has access to facial recognition software, an individual's right to be anonymous becomes almost nonexistent in the absence of regulations for this type of technology. This is the challenge that AI presents. Recording a face is one thing, but recording a face that can be easily identified through the use of AI at any time can be alarming. Some may opine that privacy, in essence, will no longer exist. As "The Ultimate Guide to Face Recognition" states, "Face recognition is great but every great thing comes at a price. And the price we pay is our privacy ... are we ready to be on a constant watch?"⁶⁷ The Fourth Amendment and how it can affect AI will be explored in greater detail in the next chapter.

The use of facial recognition technology is steadily increasing and will continue to evolve as AI capabilities improve. As its use increases, so will unintended consequences, including community members who believe that privacy concerns are not being addressed by the law enforcement agencies, that the technology is being used without justification, or that it is being used to create a surveillance state without limitation. These are hindrances

⁶⁵ Max Goetschel and Jon M. Peha, "Police Perceptions of Body-Worn Cameras," *American Journal of Criminal Justice* 24, no. 4 (2017): 701, <http://dx.doi.org/10.1007/s12103-017-9415-5>.

⁶⁶ As stated in the Fourth Amendment, "The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized."

⁶⁷ Matyunina, "The Ultimate Guide to Face Recognition."

to implementation of AI in law enforcement agencies that will need solutions.⁶⁸ The solutions are presented in Chapter IV.

2. Predictive Policing Software

In the 2002 movie *Minority Report*, based on a short story of the same name by Philip K. Dick, the concept of predictive policing is explored.⁶⁹ A summary of the movie explains:

In the year 2054 A.D. crime is virtually eliminated from Washington, DC, thanks to an elite law enforcing squad “Precrime.” They use three gifted humans (called “Pre-Cogs”) with special powers to see into the future and predict crimes beforehand. John Anderton heads Precrime and believes the system’s flawlesseness steadfastly. However, one day the Pre-Cogs predict that Anderton will commit a murder himself in the next 36 hours. Worse, Anderton doesn’t even know the victim. He decides to get to the mystery’s core by finding out the ‘minority report’ which means the prediction of the female Pre-Cog Agatha that “might” tell a different story and prove Anderton innocent.⁷⁰

Although based in fiction, this movie illustrates what predictive policing looks like to some extent: the ability to use mathematical algorithms, assisted by AI (in the movie, “Pre-Cogs”), to predict a crime, with the ultimate goal of preventing that crime from occurring. Overall, predictive policing technology attempts to reduce crime by predicting where it will occur so that law enforcement agencies can deploy their resources strategically.⁷¹

Critics of predictive policing argue that the algorithms used target marginalized communities and encourage discrimination.⁷² To test this idea, P. Jeffrey Brantingham, Matthew Valasik, and George O. Mohler examined arrest rates in three divisions patrolled

⁶⁸ Possible solutions are discussed in in Chapter IV.

⁶⁹ Encyclopaedia Britannica, s.v. “Philip K. Dick,” February 23, 2018, <https://www.britannica.com/biography/Philip-K-Dick>.

⁷⁰ “Minority Report (2002),” IMDb, accessed June 10, 2018, <https://www.imdb.com/title/tt0181689/>.

⁷¹ “Predictive Policing,” National Institute of Justice, accessed June 9, 2018, <https://www.nij.gov/topics/law-enforcement/strategies/predictive-policing/Pages/welcome.aspx#overview>.

⁷² P. Jeffrey Brantingham, Matthew Valasik, and George O. Mohler, “Does Predictive Policing Lead to Biased Arrests? Results from a Randomized Controlled Trial,” *Statistics and Public Policy* 5, no. 1 (2018): 1–6, <https://doi.org/10.1080/2330443X.2018.1438940>.

by the Los Angeles Police Department after the introduction of predictive policing.⁷³ Their conclusion was surprising: they found no significant differences in arrests in locations where predictive policing technology was deployed.⁷⁴ This may not be true in other locations, and the authors recognize that achieving fairer, less biased outcomes will require transparent policy and rigorous monitoring of the research.⁷⁵ This is an important step that law enforcement agencies should continually take if they are to venture into predictive policing.

In a real-life example of predictive policing, the Elgin Police Department in Illinois has been using a software program called PredPol for several years. According to the program's website, PredPol "aims to reduce victimization and keep communities safer. Our day-to-day operations tool identifies where and when crimes are most likely to occur so that you can effectively allocate your resources and prevent crime."⁷⁶ The software works by combining AI with data from a law enforcement agency's calls for service—including crime type, location, and date and time of occurrence—to teach the predictive algorithm to identify where crimes are most likely to occur.⁷⁷ PredPol claims that the algorithm is void of any socioeconomic personal identifiers so that privacy and civil rights are not violated.⁷⁸ As shown in Figure 5, PredPol produces a map of a given area and uses red boxes to highlight 500-square-foot areas that it has determined officers should focus on through foot and vehicle patrols. The agency can select the types of crimes it wants its software to predict, and the results can differ based on the time of day. The software also allows for historical analysis of crime-type incidents as a means to compare predictions to actual occurrences, as depicted in Figure 6.

⁷³ Brantingham, Valasik, and Mohler.

⁷⁴ Brantingham, Valasik, and Mohler, 5.

⁷⁵ Brantingham, Valasik, and Mohler.

⁷⁶ PredPol, accessed June 9, 2018, <http://www.predpol.com/>.

⁷⁷ PredPol.

⁷⁸ PredPol.

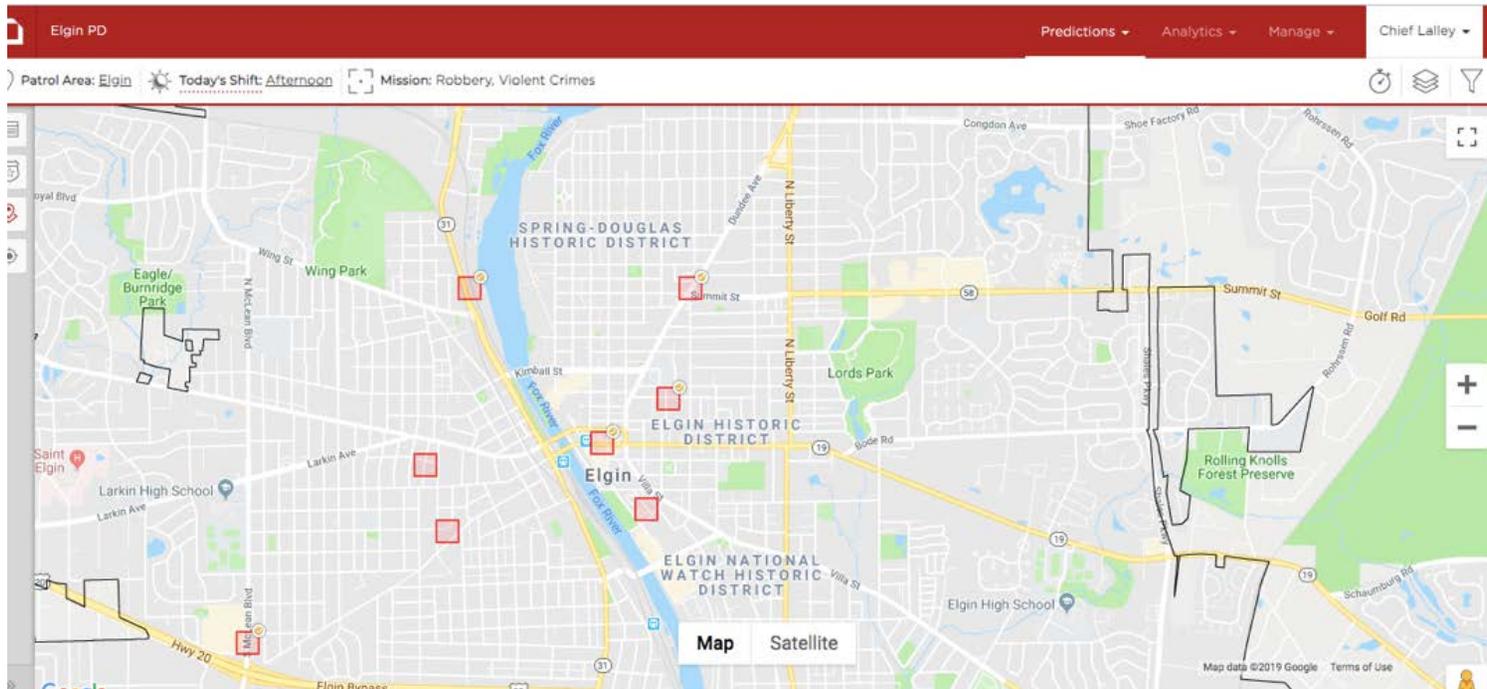


Figure 5. PredPol Target Areas in Elgin, Illinois⁸⁴

⁸⁴ Screenshot from PredPol, Elgin Police Department, June 9, 2018.

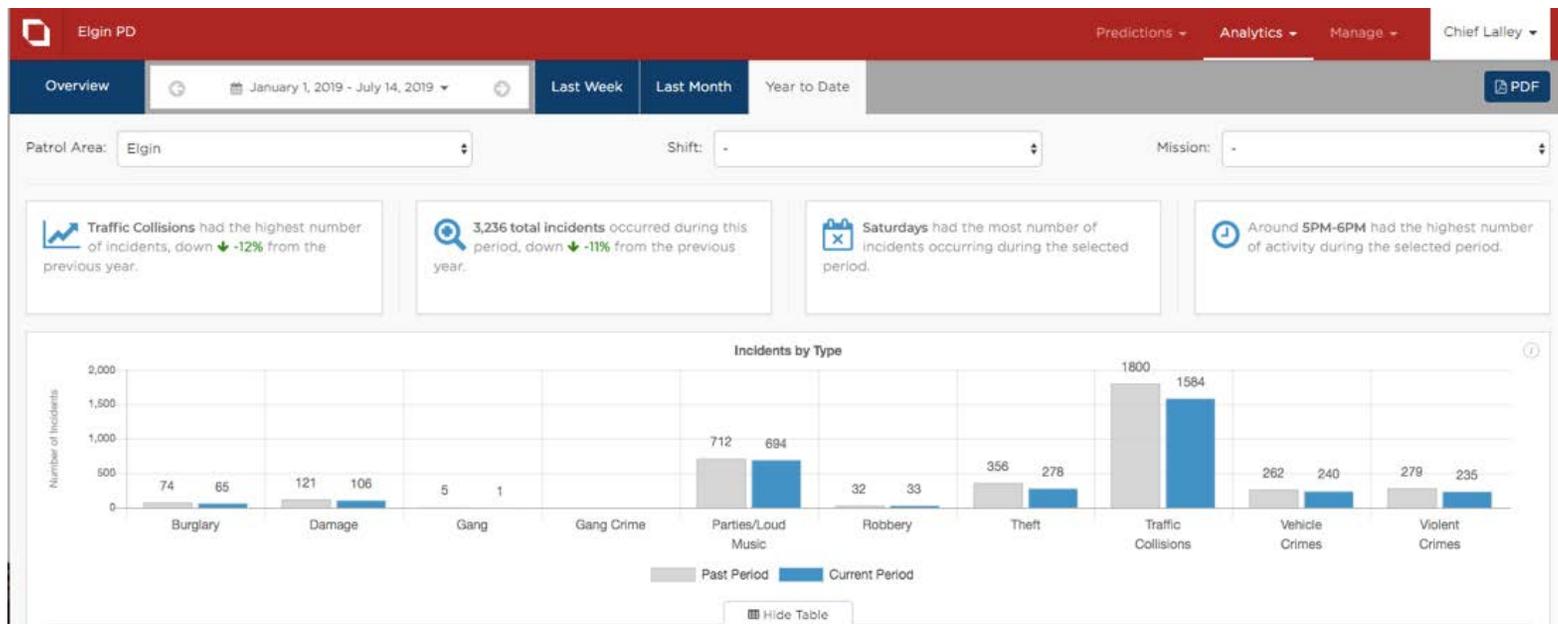


Figure 6. Crime Patterns in Elgin, Illinois, Output by PredPol⁸⁵

⁸⁵ Screenshot from PredPol, Elgin Police Department, June 9, 2018.

Although the Elgin Police Department has used PredPol for several years, the software has not impressed officers. Officers routinely question the prediction method; many believe that the awareness of crime trends and patterns they have gained through training and experience help them make predictions on their own that are similar to the software's predictions. The Elgin officers' concerns were brought to PredPol and the company noted that the fairly low crime rate in Elgin may contribute to such results. In other words, predictive policing software may not be particularly effective in communities that have little crime. Even larger police agencies, however, are reassessing the viability of predictive policing. For example, in March 2019 the Los Angeles Police Department decided to end its use of PredPol due to pressure from the community that the algorithms contain bias and encourage officers to patrol traditionally marginalized communities.⁸⁶ Further, the department states that its "own internal audit concluded there were insufficient data to determine if the PredPol software—developed by a UCLA professor in conjunction with the LAPD—helped to reduce crime."⁸⁷ In response to this information, the Elgin Police Department will be partnering with an educational institute to study the effectiveness and reliability of PredPol.

Law enforcement agencies using AI-enabled software would be wise to verify that the technologies are working as intended, and, if they are not, to eliminate the technology. On the plus side, a 2017 publication from the Department of Justice argues that "technology is having a positive impact on U.S. law enforcement agencies in terms of increasing efficiency, providing communication, enhancing information-sharing practices, and improving informational and analytical capacities."⁸⁸ To remain effective, however, any nonperforming technology that creates less trust between the community and law

⁸⁶ Mark Puente, "LAPD Pioneered Predicting Crime with Data. Many Police Don't Think it Works," *Los Angeles Times*, July 3, 2019, <https://www.latimes.com/local/lanow/la-me-lapd-precision-policing-data-20190703-story.html>.

⁸⁷ Puente.

⁸⁸ Kevin Strom, "Research on the Impact of Technology on Policing Strategy in the 21st Century, Final Report" (report, Department of Justice, September 2017), 2-3, <https://www.ncjrs.gov/pdffiles1/nij/grants/251140.pdf>.

enforcement, or poses unanswered questions for a law enforcement agency, should not be considered for use.

3. License Plate Readers

License plate readers (LPRs) are devices, placed on buildings or vehicles, that collect license plate information and compare it to a list of vehicles that are of interest to a law enforcement agency.⁸⁹ Once a license plate has been identified, the LPR will alert an officer and further action may be taken.⁹⁰ LPRs use AI to scan vast amounts of data to identify vehicles in conjunction with their owners. The downside, as noted by the American Civil Liberties Union (ACLU), is that this technology raises serious questions about privacy and civil rights, especially when information is shared by many agencies.⁹¹ The ability to recreate where a person has been and his or her travels throughout many cities is of much concern to the ACLU, particularly because LPRs create

[o]pportunities for institutional abuse, such as using them to identify protest attendees merely because these individuals have exercised their First Amendment-protected right to free speech. If not properly secured, license plate reader databases open the door to abusive tracking, enabling anyone with access to pry into the lives of his boss, his ex-wife, or his romantic, political, or workplace rivals.⁹²

Although this technology has caused concern, like facial recognition software, LPRs have helped officers solve crimes. Agencies have used video footage from an LPR, for instance, to build a case against a suspect in a homicide, and identify a driver in a stolen vehicle where contraband was located.⁹³ As more agencies begin to implement LPRs into everyday policing, they will need to balance the crime-solving ability of AI-enabled

⁸⁹ Keith Gierlack et al., *License Plate Readers for Law Enforcement: Opportunities and Obstacles* (Santa Monica, CA: RAND, 2014), xi.

⁹⁰ Gierlack et al., xi.

⁹¹ Catherine Crump, “You Are Being Tracked: How License Plate Readers Are Being Used to Record Americans’ Movements” (report, American Civil Liberties Union, July 2013), <https://www.aclu.org/other/you-are-being-tracked-how-license-plate-readers-are-being-used-record-americans-movements>.

⁹² Crump, 2.

⁹³ Lisa J. Huriash, “License Plate Readers Are Solving Crimes, Cities Say,” *Sun Sentinel*, January 22, 2016, <http://www.sun-sentinel.com/local/broward/fl-coral-springs-license-plates-20160122-story.html>.

technology with the implementation of policies and procedures that can help quell concerns from the public.

B. LEGAL CONSIDERATIONS OF ARTIFICIAL INTELLIGENCE

Finding ways to encourage the appropriate use of AI technologies, as described in the previous section, involves weaving the legal considerations of AI into any model for implementation. Legal considerations involve privacy concerns and following constitutional principles. This section provides an in-depth review of these concepts and illustrates the importance of being mindful of legal considerations by providing case examples.

1. Privacy Concerns

The Fourth Amendment is a necessary topic of conversation when implementing AI into a law enforcement agency in the United States. This amendment to the U.S. Constitution provides a sense of security and safety to citizens, who can feel comfort in knowing that a law enforcement agency will not invade their privacy without sufficient and just cause. The amendment, however, only provides a person protection if that person has a *reasonable* expectation of privacy. An individual “must have a subjective intent to keep something private and that expectation must be one that society is willing to recognize as reasonable.”⁹⁴ The definition of what is reasonable has to evolve and keep pace with technology. In a society where cameras are operating in public locations to ensure safety, for example, it would not be reasonable to expect the cameras not to capture facial images throughout the day.

The guiding Fourth Amendment case law comes from the Supreme Court’s decision in *Katz v. United States*, where the court ruled that the amendment “protects people, not places.”⁹⁵ The case involved Charles Katz, who entered a phone booth that had

⁹⁴ House Research Department, “House Research Short Subjects: The Constitution and the Legislature,” Minnesota House of Representatives, October 2002, <https://www.house.leg.state.mn.us/hrd/pubs/ss/clss4th.pdf>.

⁹⁵ *Katz v. United States*, 389 U.S. 347 (1967), <https://noticiasmicrojuris.files.wordpress.com/2014/06/katz-v-united-states-389-u-s.pdf>.

been equipped with a hidden recording device by the FBI. Mr. Katz entered the phone booth to make illegal gambling bets, and he was subsequently arrested and convicted.⁹⁶ The court reversed his conviction, however, ruling that Mr. Katz's conversation inside of the phone booth was protected under the Fourth Amendment even though he was in the public view at the time.

The *Katz* decision overturned the 1928 case of *Olmstead v. United States*, in which the Supreme Court ruled that “a wiretap on a telephone wire in a public street did not constitute a search.”⁹⁷ The *Olmstead* case involved the illegal distribution of alcohol, which was facilitated via arrangements made on telephones located inside the residence of coconspirators.⁹⁸ Federal prohibition officers installed covert wiring to the phone wires located on the outside of the house, which allowed them to intercept the phone calls. Through the information that was obtained, *Olmstead* and several others were arrested and convicted of federal charges. The court found that the officers did not violate *Olmstead*'s Fourth Amendment rights and that the officers acted reasonably, stating:

The United States takes no such care of telegraph or telephone messages as of mailed sealed letters. The Amendment doesn't forbid what was done here. There was no searching. There was no seizure. The evidence was secured by the use of the sense of hearing and that only. There was no entry of the houses or offices of the defendants.⁹⁹

As mentioned, however, this position was overturned by the *Katz* case when the court determined that even though a listening device had been placed by the FBI on a telephone located on a public street, that act did not necessarily impede an individual's person in the sense of ownership. The court, however, found that individuals who used the phone booth still had an expectation of privacy in their conversations. The court therefore ruled that Katz's “conversation was constitutionally protected, not because of a ‘general

⁹⁶ *Katz v. United-States*.

⁹⁷ Jessica Gutierrez-Alm, “The Privacies of Life: Automatic License Plate Recognition Is Unconstitutional under the Mosaic Theory of Fourth Amendment Privacy Law,” *Hamline Law Review* 38, no. 1 (2015): 11, <http://digitalcommons.hamline.edu/hlr/vol38/iss1/5>.

⁹⁸ *Katz v. United-States*.

⁹⁹ *Katz v. United-States*.

constitutional right to privacy’ but because the [Fourth] Amendment protects what a person ‘seeks to preserve as private.’”¹⁰⁰

In terms of how the Fourth Amendment can affect the use of AI, *Katz* makes it clear that the primary concern is whether the use of the technology violates a person’s expectation of privacy and if that expectation is reasonable. Separately, a problem for law enforcement agencies is that many citizens do not believe that officers’ use of AI is reasonable. A citizen may not be affected by the use of AI technology, so their privacy remains intact. Regardless, the citizen may believe that the use of such technology is not reasonable; the fact that AI is even being used by law enforcement may leave some with an uneasy feeling. However, as technology changes, so should expectations for a definition of reasonableness in both contexts.

Toby Walsh proposes the enactment of a law that protects humans from AI; at some point in the future, he argues, society will have to recognize that AI will have an impact on how humans interact. Walsh further states that these interactions need to be identified as happening between two humans or between a human and an AI-enabled system.¹⁰¹ Based on the Turing Test—a series of tests designed by the father of AI, Alan Turing, that determines if something is AI or human—Walsh proposes a law that he calls the Turing Red Flag law.¹⁰² This law would state that “[a]n autonomous system should be designed so that it is unlikely to be mistaken for anything besides an autonomous system, and should identify itself at the start of any interaction with another agent.”¹⁰³ He also believes that any law that is written needs to define what an autonomous system is in a way that leaves room for technological advances as they are made.

If this law is passed, the implications would be counterproductive for law enforcement agencies. Law enforcement agencies will wish to use AI-enabled systems to

¹⁰⁰ Gutierrez-Alm, “The Privacies of Life,” 11.

¹⁰¹ Toby Walsh, “Turing’s Red Flag,” *Communications of the ACM* 59, no. 7 (July 2016): 34–37, <https://doi.org/10.1145/2838729>.

¹⁰² Walsh.

¹⁰³ Walsh, 35.

gather information covertly, and within applicable laws and constitutional requirements. It is impractical for agencies to make a notification every time an AI system is in use, and doing so would jeopardize their mission. Although this law would be beneficial in some circumstances, in other circumstances it would be counterproductive to what AI systems are designed to do.

2. Other Legal Considerations

Since AI is in its infancy, many legal questions remain unanswered. As the field of AI grows, legislation will undoubtedly be developed and court decisions issued to guide law enforcement's use of AI. Currently, there are many challenges to defining the legal framework in which AI should operate. One such challenge is noted in the *Case Western Reserve Law Review*, in an article by Iria Giuffrida, Frederic Lederer, and Nicolas Vermerys:

unlike legal terms which are expected to have a single definition unless otherwise stated in the statute, most technological constructs benefit from shifting meanings depending on the author. This adds to the confusion of those who try to predict how the law should treat AI, for example, as authors cannot agree on what AI represents conceptually.¹⁰⁴

In short, the first hurdle is determining what exactly AI is; the second hurdle is determining what the guidelines for its use should be. These hurdles are highlighted with examples in the next section of this chapter.

The question of what AI represents will also undoubtedly have many challenges. Is AI the actual technology in use or is AI the thinking behind the technology? Giuffrida, Lederer, and Vermerys contend that a key part of defining this will concern the party responsible for AI actions. In their view, AI “will be regarded as property.”¹⁰⁵ Thus, a device itself could not be “held civilly or criminally liable for harm done by it” any more than a car could be charged for causing an accident. Rather, the law enforcement agency

¹⁰⁴ Iria Giuffrida, Frederic Lederer, and Nicolas Vermerys, “A Legal Perspective on the Trials and Tribulations of AI: How Artificial Intelligence, the Internet of Things, Smart Contracts, and Other Technologies Will Affect the Law,” *Case Western Reserve Law Review* 68, no. 3 (2010): 751, <https://scholarlycommons.law.case.edu/caselrev/vol68/iss3/14/>.

¹⁰⁵ Giuffrida, Lederer, and Vermerys, 763.

that owns and uses AI, the designer of the device, and/or the manufacturer who made the device would be responsible for “civil liability under tort law.”¹⁰⁶ Therefore, a court may award damages to compensate for injuries that occur from its use.¹⁰⁷ In essence, according to Giuffrida, Lederer, and Vermerys, the owner of the technology will be held responsible for its wrongdoing. However, this will also involve determining who actually made the decision that caused harm—the owner of the AI technology or the AI itself. For law enforcement, this will become precarious if and when robots are implemented into the field. Using the futuristic *RoboCop* scenario as a blueprint for the future, who would be held liable for an unlawful use of force or abuse of constitutional rights: the law enforcement agency that deploys the technology, or the designer and/or manufacturer of the robot and the machine learning it uses? Under the application of tort law for civil liability, it could be either.

As the field of AI continues to expand, Giuffrida, Lederer, and Vermerys contend that the speed of its adoption and its enormous impact will outstrip the system’s ability to apply traditional law, and accommodating AI will require changes in the law itself.¹⁰⁸ Agencies that are considering venturing into the AI arena must recognize legal considerations in an effort to not only mitigate liability but also to understand the vast responsibilities that its use can bring.

3. Case Examples

The first case offered here illustrates the benefit of AI technology and highlights how crimes that have long been committed in eras when technology did not exist are now being solved. The point of this case is to remember that although there are many challenges with AI, it is worth it to face them if AI can bring closure to a victim’s family.

In 1974, James Robert Jones was convicted of killing a fellow soldier and sentenced to twenty-three years, to be served in the military prison at Fort Leavenworth. He escaped

¹⁰⁶ Giuffrida, Lederer, and Vermerys, 769.

¹⁰⁷ “Defining the Difference between Tort and Civil Law,” The Babcock Law Firm, accessed August 11, 2019, <https://www.injurylawcolorado.com/legal-news/personal-injury-2/tort-civil-law-differences.htm>.

¹⁰⁸ Giuffrida, Lederer, and Vermerys, “A Legal Perspective,” 781.

in 1977 and was not captured until forty years later, through the use of facial recognition technology. While Jones was living under the name of Bruce Walter Keith in Florida, federal marshals compared Jones's old military photo to photos obtained from a database of Florida driver's licenses—including one issued to Jones under his alias in 1981—and made a positive match.¹⁰⁹ This AI-aided identification proved to be accurate and ultimately led to Jones's reincarceration and provided closure for the victim's family. Without the use of facial recognition software, Jones may not have been brought to justice. It also could be argued that comparing a picture of a person to another picture is far less invasive than taking a DNA sample from a person in an effort to find a match. Given the rapid incorporation of this software into law enforcement efforts, such matches may become more routine.

Another example of law enforcement using AI involves a murder that occurred in November 2015 in Arkansas and a device called the Amazon Echo, commonly referred to as Alexa. The device is described as “a voice-activated, internet-connected ‘smart speaker’ with a built-in virtual assistant named Alexa that can answer your questions, follow your instructions and control your smart home devices.”¹¹⁰ In this case, a deceased man was found at the home of James Bates, who was accused of committing the murder. The prosecutor issued a warrant directing Amazon to provide a copy of any recordings created by an Alexa device that was located near the body at the time of the death. Amazon refused, saying that Bates's First Amendment rights trumped the warrant.¹¹¹ Following his consent, however, Bates's attorney subsequently obtained copies of the recordings from Amazon and presented them to the prosecutor, negating the need for litigation about the validity of the warrant. In 2017, the criminal case was dismissed by a judge after the prosecutor, who had reviewed the recordings, stated, “I can't stand in front of a jury and ask them to convict

¹⁰⁹ Davis, “Facial Recognition Technology Helps Nab Criminals.”

¹¹⁰ Ry Crist and Andrew Gebhart, “Everything You Need to Know about the Amazon Echo,” CNET, September 21, 2018, <https://www.cnet.com/how-to/amazon-echo-alexa-everything-you-need-to-know/>.

¹¹¹ Firth-Butterfield, “Artificial Intelligence and the Law.”

someone beyond a reasonable doubt if I myself have a reasonable doubt.”¹¹² This case illustrates the ability of law enforcement to obtain unvarnished evidence via AI that is captured contemporaneous with an incident—even when it works in favor of the accused. This is where opponents of AI should take note: technology does not always threaten to infringe on civil liberties. In fact, sometimes it can protect an innocent person against arrest or unjust prosecution.

The Bates case may become a more frequent reality; it is estimated that one in six people in the United States owns some form of Alexa.¹¹³ The case also highlights a new set of concerns: Who owns the data captured by the device? Can it be used in a criminal investigation if the recording takes place in the privacy of someone’s home? Can the data be manipulated? Law enforcement will need to consider these concerns when investigating incidents involving AI technology.

C. CONCLUSION

Law enforcement’s use of AI technology is an emerging field. Concerns involving AI include privacy violations and other legal considerations, such as determining who owns the AI technology and who is responsible for the decision-making process that causes harm when it is used. Central to these technologies is the need to be aware of the consequences of implementation. A Department of Justice publication notes that “technology can produce various positive outcomes relative to improvements in policing practices and the establishment of trust and legitimacy with communities.”¹¹⁴ To foster trust, the utmost attention should be given to privacy considerations, legitimate use, community input, and transparency when implementing an AI program for law enforcement. Chapter III shows how one police department—albeit outside the United States—has implemented such a program.

¹¹² Nicole Chavez, “Arkansas Judge Drops Murder Charge in Amazon Echo Case,” CNN, December 2, 2017, <https://www.cnn.com/2017/11/30/us/amazon-echo-arkansas-murder-case-dismissed/index.html>.

¹¹³ Sarah Perez, “39 Million Americans Now Own a Smart Speaker, Report Claims,” TechCrunch, January 12, 2018, <https://techcrunch.com/2018/01/12/39-million-americans-now-own-a-smart-speaker-report-claims/>.

¹¹⁴ Strom, “Impact of Technology on Policing Strategy,” 2-3.

III. CASE STUDY OF ARTIFICIAL INTELLIGENCE: THE DUBAI POLICE FORCE

Governments don't need to follow normal laws. They will obtain AI developed by companies at gunpoint, if necessary.

—Elon Musk¹¹⁵

This chapter provides information about the Dubai Police Force, which has embraced AI. This agency's use of AI serves as a case study to provide guidance for a model of implementation, presented in Chapter IV. Although the government in the United Arab Emirates (UAE), where Dubai is located, is not the same as it is in the United States, there are enough similarities to compare some considerations for law enforcement agencies.¹¹⁶ This chapter provides a description of the agency, the type of government in which it operates, and the types of AI the agency uses. This information serves as background for the comparative analysis of AI in U.S. and foreign law enforcement agencies that appears in Chapter IV.

The Dubai Police Force comprises over 15,000 employees and was established in 1956 with a mission “to improve the quality of life in the UAE by acting in accordance with the constitutional rights of law enforcement, maintaining the security and safety of the community.”¹¹⁷ On its website, the agency describes itself as “the most forward thinking and progressive Arab Police Force today.”¹¹⁸ As emphasized by Mohammed bin Rashid Al Maktoum—vice president and prime minister of the UAE and ruler of Dubai—“the government is an authority FOR the people and not over them.”¹¹⁹ Government

¹¹⁵ Clifford, “9 Things Elon Musk said in 2017.”

¹¹⁶ The United States is a federal republic and a constitutional representative democracy. The United Arab Emirates is a constitutional federation.

¹¹⁷ “Overview,” Dubai Police, accessed August 3, 2019, <https://www.dubaipolice.gov.ae/wps/portal/home/aboutus/overview>.

¹¹⁸ “Dubai Police,” UAE Embassy, accessed July 16, 2019, <https://www.uae-embassy.org/services-resources/students/scholarship-programs/dubai-police>.

¹¹⁹ “Dubai Plan 2021,” Government of Dubai, accessed July 16, 2019, <https://www.dubaiplan2021.ae/the-government/>.

services like the Dubai Police are designed to ensure “people’s happiness and satisfaction with government services and policies.”¹²⁰ Importantly, this message stresses that the agency’s initiatives serve as a mechanism to improve citizen’s lives.

The Dubai government understands that it plays a key role in this equation, as evidenced by the services it delivers. The AI initiatives the Dubai Police has implemented aim to make citizens’ lives better through convenience, accessibility, and streamlined processes. As noted in the Dubai government’s plan for 2021, the “government is forward-looking, proactively listening to and engaging all stakeholders, to ensure that its policies and services meet the needs of individuals and society as a whole.”¹²¹ This philosophy is also evident in the Dubai Police’s marketing, such as the banner on its Facebook page (see Figure 7), which indicates that the police and citizenry are working together in a “smart” fashion. “Smart” practices also come from the agency’s AI initiatives, which are discussed later in this chapter.



Figure 7. Dubai Police Facebook Logo¹²²

¹²⁰ Government of Dubai.

¹²¹ “Dubai Strategic Plan 2015,” Government of Dubai, accessed July 16, 2019, <https://www.dubaiplan2021.ae/dsp-2015-2/>.

¹²² Source: Dubai Police, cover photo, Facebook, July 24, 2019, <https://www.facebook.com/dubaipolicehq.en/>.

A. THE UAE GOVERNMENT

The Dubai Police Force operates under the UAE government, whose constitution was permanently adopted in 1996. The form of government is a federal presidential elected monarchy.¹²³ A president and vice president serve five-year terms, and they are “elected by a body known as the Supreme Council of Rulers. The Supreme Council is the top policy-making body in the UAE.”¹²⁴ The legal system in the UAE is based on civil courts as well as Islamic Sharia law; it is important to note that although Sharia law is one governing factor, it is not the only one that is considered.¹²⁵ Sharia law addresses many parts of life for those who follow it, including contracts, banking, and familial issues; in the UAE, it is only used in the absence of law that is not contained in the country’s constitution.¹²⁶ The laws in the UAE are less restrictive than those in other Arab countries, and the UAE is constantly revising its laws to keep pace with emerging technology and societal changes.¹²⁷

The UAE Constitution has 152 articles that govern its citizens.¹²⁸ The document “provides that the United Arab Emirates is a federal, independent and sovereign state consisting of the emirates of Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al Quwain, Fujairah and Ras Al Khaimah.”¹²⁹ The Supreme Council, along with several other governing bodies, decides on legislation, and the political environment is described as

¹²³ “The Political System of the UAE,” Helen Ziegler and Associates, accessed August 18, 2019, <https://www.hziegler.com/articles/political-system-of-the-uae.html>.

¹²⁴ “About the Government,” UAE Embassy, accessed July 16, 2019, <https://www.uae-embassy.org/about-uae/about-government>.

¹²⁵ Helen Ziegler and Associates, “The Political System of the UAE”; Michael Webb, “Sharia as a Source of UAE Law,” Hadeef and Partners, accessed August 18, 2019, <http://www.hadeefpartners.com/News/115/SHARIA-AS-A-SOURCE-OF-UAE-LAW>.

¹²⁶ Webb, “Sharia as a Source of UAE Law.”

¹²⁷ “General Laws and Regulations in Dubai,” Guide2Dubai, April 18, 2019, <https://www.guide2dubai.com/living/laws-and-regulations/basic-laws-uae>.

¹²⁸ “The Constitution,” Government of the UAE, accessed July 16, 2019, <https://www.government.ae/en/about-the-uae/the-constitution-of-the-uae>.

¹²⁹ Government of the UAE.

having “great affection for the country’s leadership and institutions of government.”¹³⁰

Article 24 of the UAE Constitution states:

The basis of the national economy shall be social justice. The support of the national economy shall be sincere co-operation between public and private activity. The aim of the national economy shall be the achievement of economic expansion, increased production, the raising of standards of living and the achievement of prosperity for citizens within the limits of the Law. The Union shall encourage co-operation and saving.¹³¹

It is apparent from this article that cooperation between the public and government is important, and that this philosophy permeates the citizenry. Approximately 90 percent of the population comprises expatriates from various countries who have decided to live in the UAE.¹³² The UAE has made it a priority to be a leader in social and human endeavors and has spelled out this ambition in its “2021 Vision,” as illustrated in Figure 8.

Dubai’s strategic plan lists initiatives that serve as pillars for growth: economic development; social development; infrastructure, land, and environment; safety, security, and justice; and government excellence (see Figure 9). The Dubai Police exemplifies how strategic thinking can shape law enforcement policy and practice by incorporating cutting-edge AI technology.

¹³⁰ UAE Embassy, “About the Government.”

¹³¹ *United Arab Emirates’s Constitution of 1971 with Amendments through 2004* (Oxford: Oxford University Press, 2004), 7, https://www.constituteproject.org/constitution/United_Arab_Emirates_2004.pdf.

¹³² John Copestake, “UAE Expatriates and the Bottom Line” (briefing paper, The Economist Intelligence Unit, 2015), <https://eiuperspectives.economist.com/sites/default/files/LON%20-%20AG%20-%20UAE%20expatriates%20and%20the%20bottom%20line%20WEB.pdf>.



Figure 8. UAE 2021 Vision¹³³



Figure 9. Dubai's Strategic Goals¹³⁴

¹³³ Adapted from "National Agenda," Vision 2021, accessed October 23, 2019, <https://www.vision2021.ae/en/national-agenda-2021>.

¹³⁴ Source: Government of Dubai, "Dubai Strategic Plan 2015."

B. USE OF ARTIFICIAL INTELLIGENCE

The Dubai Police has pioneered the use of AI; this section describes the technologies currently in use. Brigadier Khaled Nasser Al Razzouqi, director of the agency's Artificial Intelligence Department, outlines the department's goals as follows:

Dubai Police aims to develop the best techniques and AI tools that serve the needs of the people, locally and globally ... the AI strategic plan 2018–2031 focuses on achieving targets like 'Delight the Society' through providing future policing services easily to the public; and making 'Dubai a Safe City' through the use of AI systems.¹³⁵

The agency has also created a strategic plan that centers on AI technology, which serves as a roadmap for incorporating AI into society, for both law enforcement and the public. This plan identifies the need "to develop AI-assisted customer service centres, smart police stations in different regions, as well as 'walk in' and 'drive through' centres having robots."¹³⁶ Despite the use of certain types of AI technology in the United States, the Dubai Police is light years ahead in its implementation. Figure 10 illustrates the Dubai Police vision, message, strategic goals and directions; it is apparent that AI is at the forefront of all the technological initiatives. The Dubai Police seeks to use AI technology for traditional police services as well, such as investigations, traffic control, emergency management, and overall police operations.¹³⁷ The next subsections discuss the specific AI technologies the Dubai Police uses.

¹³⁵ Priyankar Bhunia, "Dubai Police Releases 2018–31 Strategic Plan for Artificial Intelligence," Opengov Asia, December 21, 2017, <https://www.opengovasia.com/dubai-police-releases-2018-31-strategic-plan-for-artificial-intelligence/>.

¹³⁶ Bhunia.

¹³⁷ Bhunia.



Figure 10. Dubai Police Vision and Strategic Goals¹³⁸

¹³⁸ Source: "Our Strategy," Dubai Police, accessed July 21, 2019, <https://www.dubai.police.gov.ae/wps/portal/home/aboutus/ourstrategy>.

1. Police Robot

In May 2017, the Dubai Police revealed a new police officer—a robot. The robot, pictured in Figure 11, uses AI technology and can provide services to the public in many languages. The robot is equipped with facial recognition technology, and a person interacting with it can contact the Dubai Police directly from a touchscreen mounted on its front.¹³⁹ The Dubai Police worked with Google and IBM to create the technology, and, according to Brigadier Abdullah Bin Sultan, the agency aspires “to have more robots in [the] future to handle policing. By 2030, we are keen to make robots around 25 per cent of the total police force.”¹⁴⁰ Eventually the department hopes to have robots that can run and carry heavy equipment.¹⁴¹ This technology could reduce officer injuries and allow for safer interactions between police and citizens.¹⁴²



Figure 11. Photo of Dubai Police Robot¹⁴³

¹³⁹ Daisy Dunne, “The Real-Life Robocop Set to Serve and Protect in Dubai: Droid Will Patrol the Streets from May and Make up a QUARTER of the Police Force by 2030,” *Daily Mail*, March 20, 2017, <http://www.dailymail.co.uk/~/article-4331662/index.html>.

¹⁴⁰ Dunne.

¹⁴¹ Susannah Breslin, “Meet The Terrifying New Robot Cop That’s Patrolling Dubai,” *Forbes*, June 3, 2017, <https://www.forbes.com/sites/susannahbreslin/2017/06/03/robot-cop-dubai/>.

¹⁴² Susannah Breslin, “Meet The Terrifying New Robot Cop That’s Patrolling Dubai,” *Forbes*, June 3, 2017, <https://www.forbes.com/sites/susannahbreslin/2017/06/03/robot-cop-dubai/>.

¹⁴³ The ability to provide services to the public while also mitigating liability will be discussed in greater detail in Chapter IV, including as it relates to law enforcement in the United States.”

2. Smart Police Stations

In 2017, the Dubai Police unveiled its first Smart Police Station. This station, which is in service around the clock, offers sixty key services to citizens, such as filing a police report, reporting a crime by connecting with a police officer remotely, receiving a copy of a police report, paying a fine, and even dropping off found property.¹⁴⁴ The Smart Police Station experience starts when a person arrives at the station and either shows a resident identification card or, if not a resident, enters personal information to gain access.¹⁴⁵ Once inside, the person navigates to a large screen (see Figure 12) and selects the desired service.



Figure 12. A Representative from the Dubai Police Department Connects to the Control Room at a Smart Police Station¹⁴⁶

According to the Dubai Police, one of the objectives of the Smart Police Station is to be mindful of citizens who may not wish to engage with law enforcement:

People often do not want to report crimes because they feel that they will compromise their privacy, furthermore some people are intimidated by the

¹⁴⁴ Ali Al Shouk, "Fully Automated Police Station Opens at City Walk," Gulf News, September 17, 2017, <https://gulfnews.com/uae/government/fully-automated-police-station-opens-at-city-walk-1.2091514>.

¹⁴⁵ Al Shouk.

¹⁴⁶ Source: Al Shouk.

fact that [they] would have to go to a police station and deal with officers where language or customs would be a barrier therefore the Smart Police Station offers them private virtual interaction, direct access and a 24-hour service.¹⁴⁷

A post from the Dubai Police Department's Facebook page, shown in Figure 13, communicates this message to the community: the department is committed to citizens' well-being and promotes AI as the means toward this end.



Figure 13. Dubai Police Facebook Post Promoting AI¹⁴⁸

¹⁴⁷ Awad Mustafa, "Dubai Introduces World's First Smart Police Station," Al Arabiya, September 19, 2017, <http://english.alarabiya.net/en/variety/2017/09/19/Dubai-introduces-first-ever-virtual-police-station.html>.

¹⁴⁸ Source: Dubai Police, "FUTURE POLICE IS AT YOUR SERVICE," Facebook, July 14, 2019, <https://www.facebook.com/dubaipolicehq.en/photos/a.458731610871046/2358587070885481/?type=3&theater>.

There are three Smart Police Stations currently in use and the Dubai Police is working on implementing a fourth, mobile station, as depicted in Figure 14. This Smart Police Station would provide all the conveniences of the affixed stations, but also would be able to travel to a citizen's location.



FUTURE POLICE IS AT YOUR SERVICE

We want every person to live happily in the smart city of Dubai and to save time and effort. That is why we established the world's first smart police stations to serve you anytime.



#DPSPS

Figure 14. Mobile Smart Police Station¹⁴⁹

¹⁴⁹ Source: Dubai Police, “Don’t miss our brand new initiative to the Future Police,” Facebook, February 21, 2019, <https://www.facebook.com/dubaipolicehq.en/photos/a.458731610871046/2126474990763358/?type=3&theater>.

3. Smart Track System for Driving, Traffic Enforcement, and Protection

The Dubai Police Force is also using AI to make the roads safer. The Roads and Transport Authority is working on an application called the Smart Track System, which is the “first automated practical road-testing procedure,” designed to “improve operational efficiency and road safety.”¹⁵⁰ As illustrated in Figure 15, the Smart Track System, which will be incorporated into vehicles that are used for driver’s license tests, uses various methods to increase driver proficiency, provide feedback, and adjust training in response to drivers’ deficiencies. The data collected by the system will also be used “to study the behaviour of drivers” in an effort to discover the best teaching methods.¹⁵¹ Working in partnership with car manufacturers and making traffic safety a priority through AI is another example of how the Dubai Police Force is implementing and embracing this technology. The benefit to the citizens is that the roads are safer for everyone.

¹⁵⁰ “Smart Track System for Driving Licence Applicants Soon,” Gulf News, July 15, 2019, <https://gulfnews.com/uae/government/smart-track-system-for-driving-licence-applicants-soon-1.65241437>.

¹⁵¹ “What Are the AI-Powered Plans of Dubai Police,” Smart City Press, February 12, 2018, <https://www.smartcity.press/ai-plans-of-dubai-police/>.

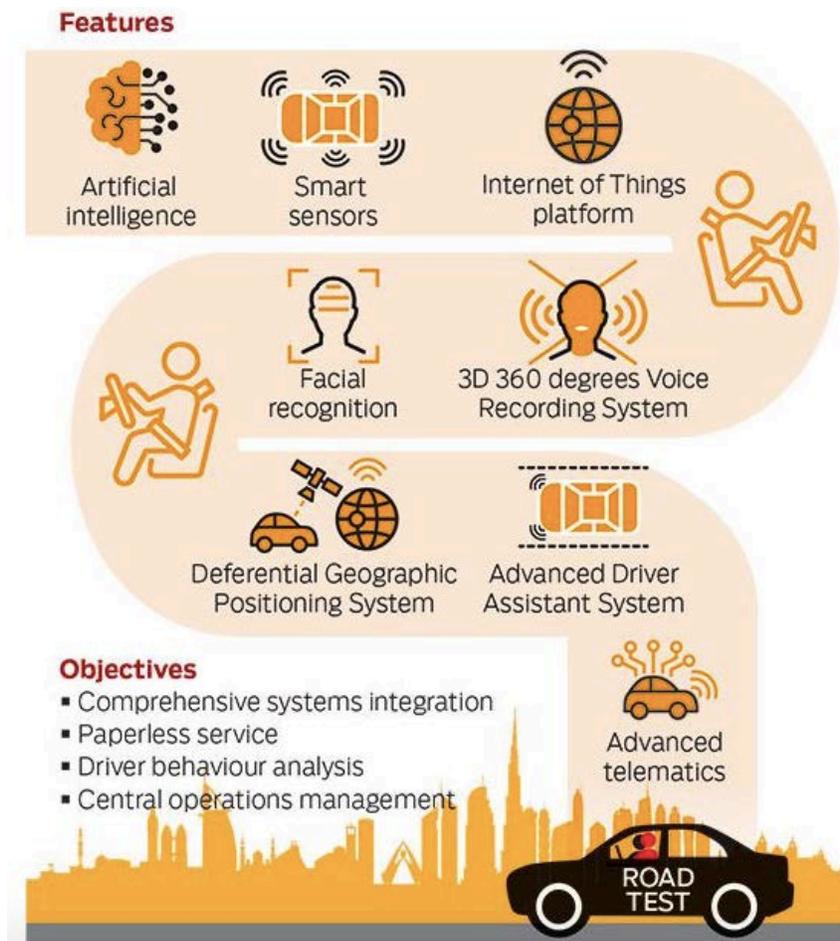


Figure 15. Dubai Smart Track System¹⁵²

¹⁵² Source: Gulf News, “Smart Track System.”

4. Facial Recognition / Predictive Policing

The UAE's entire public camera system, consisting of over 10,000 cameras used by the Dubai Police, uses AI-enabled facial recognition.¹⁵³ The Dubai Police has now merged facial recognition with predictive policing to create an AI-enabled system called Oyoon, or Eyes. Oyoon is described as

[a] security system that works through all strategic partners to exploit modern and sophisticated technologies and artificial intelligence features to prevent crime, reduce traffic accident related deaths, prevent any negative incidents in residential, commercial and vital areas and to be able to respond immediately to incidents even before they get reported to the command unit.¹⁵⁴

Oyoon combines facial recognition software, license plate reader technology, and the ability to speak to the public through cameras to monitor individuals remotely and then predict, based on surveillance, where crimes may occur.¹⁵⁵ By uploading photographs of people and then enabling cameras with AI facial recognition technology, the Oyoon system constantly scans for wanted subjects. In 2018, over 300 people were arrested because of Oyoon.¹⁵⁶ The leveraging of facial recognition, cameras, and predictive policing methods has made the Dubai Police much more effective; over 96 percent of citizens living in Dubai feel that it is a safe place, and they feel secure enough to walk alone at night.¹⁵⁷ For citizens in Dubai, it appears that a sense of security is more important than concerns about personal privacy.

¹⁵³ Caline Malek, "Robocops and Predicting Crime: Dubai Police Plan an Artificial Intelligence Future," *The National*, January 23, 2018, <https://www.thenational.ae/uae/robocops-and-predicting-crime-dubai-police-plan-an-artificial-intelligence-future-1.698034>.

¹⁵⁴ "Dubai Police to Use Artificial Intelligence and Data Analytics to Prevent Crimes," *MENabytes*, January 28, 2018, <https://www.menabytes.com/dubai-police-ai/>.

¹⁵⁵ *MENabytes*.

¹⁵⁶ Ali Al Shouk, "How Dubai's AI Cameras Helped Arrest 319 Suspects Last Year," *Gulf News*, March 18, 2019, <https://gulfnews.com/uae/how-dubais-ai-cameras-helped-arrest-319-suspects-last-year-1.62750675>.

¹⁵⁷ Ali Al Shouk, "UAE Second Safest Country to Live in the World," *Gulf News*, May 14, 2018, <https://gulfnews.com/uae/government/uae-second-safest-country-to-live-in-the-world-1.2221340>.

5. Intelligent Virtual Phone Assistant

At any law enforcement agency, the first point of contact that many citizens have with the agency is the communications center. Many times, due to call volume, a citizen may have to wait to receive service. To reduce the wait time for callers, the Dubai Police created the Intelligent Virtual Assistant. This AI technology allows the caller to contact the Dubai Police through a virtual assistant called Amena.¹⁵⁸ Amena is a smartphone application; “people can press the [app] image, give voice commands for the services they need and complete the transactions.”¹⁵⁹ This technology aims to deliver greater convenience. The more questions that are asked, the more Amena learns. Ultimately, the Dubai Police envisions all offered services will be accessible via Amena.

6. Smart Police Vehicles

The Dubai Police Force is also known for the high-performance luxury vehicles that are part of the department’s fleet. The force took it a step further, however, by introducing a Smart Police Vehicle called Ghiath, shown in Figure 16. The vehicle is described as a

police patrol equipped with artificial-intelligence systems featuring facial-recognition technology. The new patrol is one of the most advanced police vehicles in the world and it is equipped with the latest technologies. Its features include the latest crime-busting ability and a set of touchscreens.¹⁶⁰

Equipped with facial recognition software, this vehicle can instantaneously receive information and wirelessly transmit it to the Dubai Police command center. This advanced vehicle also is equipped with license plate readers and can send collected data wirelessly to the command center. The ability to instantaneously relay information to officers provides

¹⁵⁸ Amira Agarib, “‘Amena’ to Help Dubai Police App Users,” *Khaleej Times*, May 18, 2018, <https://www.khaleejtimes.com/nation/amena-to-help-dubai-police-app-users>.

¹⁵⁹ Agarib.

¹⁶⁰ Adam Workman, “New High-Tech Dubai Police Vehicle Can Recognise Faces,” *The National*, November 29, 2018, <https://www.thenational.ae/lifestyle/motoring/watch-new-high-tech-dubai-police-vehicle-can-recognise-faces-1.797029>.

a layer of security, letting officers know who may be approaching their vehicles. This information can ultimately make encounters safer for both officer and citizen.



Figure 16. Dubai Police Smart Vehicle, Ghiath¹⁶¹

C. CONCLUSION

The Dubai Police uses AI technology much differently than law enforcement in the United States. The Dubai Police approach resembles the approach taken by private companies in the United States, such as Apple or Amazon: technology is used to provide convenience and simplify processes for consumers. Through their AI technology applications, the Dubai Police focus on making the lives of citizens better and espouse the mission stated in the constitution: to achieve cooperation, social justice, and prosperity. The AI technologies described above frame the comparative analysis between law enforcement in the United States and the Dubai Police provided in the next chapter. The messaging and strategies used by the Dubai Police provide conversation starters for agencies in the United States that may decide to implement AI technology.

¹⁶¹ Mihnea Radu, “Dubai Police Reveal Epic New Beast Patrol SUV,” Auto Evolution, October 25, 2018, <https://www.autoevolution.com/news/dubai-police-reveal-epic-new-beast-patrol-suv-129650.html>.

IV. COMPARATIVE ANALYSIS, CONCLUSIONS, AND RECOMMENDATIONS

If it takes 200 years to achieve artificial intelligence, and then finally there is a textbook that explains how it's done, the hardest part of that textbook to write will be the part that explains why people didn't think of it 200 years ago.

—John McCarthy¹⁶²

This chapter explores the overall approaches to AI by the Dubai Police Force and U.S. law enforcement agencies, general acceptance of AI by the citizens in both countries, and future plans law enforcement agencies have made to evolve their AI endeavors.

A. COMPARATIVE ANALYSIS: ARTIFICIAL INTELLIGENCE IN U.S. AND FOREIGN LAW ENFORCEMENT

This section reveals how a government's approach to AI initiatives can impact its citizens' acceptance of AI and also shape future plans for government agencies, such as law enforcement. The section concludes with a recommended model that agencies can use when implementing AI.

1. Overall Approach to AI

The Dubai Police Force and law enforcement agencies in the United States both embrace the use of AI. However, the Dubai Police is not only embracing AI but leading the way in the use of this technology. The agency's relentless pursuit to be the smartest police force in the world drives many of its AI initiatives. This pursuit is evident in the numerous AI applications the agency uses and continues to invest in. The philosophy in this agency, as in any government agency, is determined by the leadership, and it is clear that the Dubai Police believes in AI. Police Brigadier Khalid Nasser Alrazooqi, the director general of the agency's Artificial Intelligence Department, exemplifies this philosophy, having stated:

¹⁶² “John McCarthy (1927–2011) on Artificial Intelligence,” Singularity, January 20, 2013, <https://www.singularityweblog.com/john-mccarthy-on-artificial-intelligence/>.

[O]ur achievement of our aspiration to become the smartest police force in the world shall be accelerated by the most advance [d] AI technologies and its applications.¹⁶³

Unlike some law enforcement agencies in the United States, the Dubai Police is not afraid to be the first to use this technology, and to be the leaders in its implementation. The Dubai Police's approach helps to counter detractors who say that AI will never be accepted, will never work, or will never change how policing is done.

For law enforcement in the United States, AI is considered an emerging technology that is accompanied by many questions and worries, particularly when it comes to security and privacy. These worries include decision-making that will be peppered with bias, inappropriate use of the technology (such as uses that violate constitutional rights or policies), and the fear of a surveillance state. However, the Dubai Police has worked to dispel many such worries associated with AI:

AI often throws up images of Skynet from the movie Terminator, but Dubai wants to give it a benevolent image. The city-state aspires to be the happiest city in the world and is banking on AI to make it possible.¹⁶⁴

This focus on dispelling the negative images associated with AI has provided the Dubai Police the ability to implement and continue to evolve AI into a robust law enforcement platform that will ultimately provide the mechanisms for a happier citizenry.

Being the smartest police force in the world means that the Dubai Police must stay current with quickly evolving AI technology. As such, the agency has participated in the World AI Show, an annual event that focuses on bringing leaders in the AI field together to share visions, strategies, product development, and implementation ideas.¹⁶⁵ The ability to showcase and highlight AI-enabled technologies allows for a greater acceptance when implementing this technology.

¹⁶³ "How Dubai Police Plans to Lead World in Artificial Intelligence," *Arabian Business*, October 17, 2018, <https://www.arabianbusiness.com/technology/406430-how-dubai-police-plans-to-lead-world-in-artificial-intelligence>.

¹⁶⁴ Suhita Roy, "Can AI Bring You Happiness? Dubai Thinks So," *Economic Times*, May 20, 2019, <https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/can-ai-bring-you-happiness-dubai-thinks-so/articleshow/69407049.cms?from=mdr>.

¹⁶⁵ World AI Show, accessed July 15, 2019, <https://dubai.worldaishow.com/>.

To solidify the commitment for a greater acceptance of AI, Dubai has also created the AI Lab. The AI Lab is an organization that seeks to push AI seamlessly into the fabric of society and aspires to see AI implemented in both public and private fields by interlinking them, and providing end-to-end tools.¹⁶⁶ While Dubai is optimistic about its future uses of AI, in the United States, a common sentiment is that citizens value their privacy, and that this can be a major hurdle for any technology to be implemented by law enforcement.¹⁶⁷ All in all, the Dubai Police's overall approach to AI has allowed the agency to set the standard for AI use in law enforcement and has identified the agency as the leader in this field.

2. Acceptance of AI by Citizens

Law enforcement agencies in both the United States and Dubai have a unique relationship with their citizens when it comes to the acceptance of AI technology. The Dubai Police believes that a happy citizenry makes for a better society. By embracing AI technology, the hope is that a person's life is made easier, simpler, and more streamlined. The belief is that AI will inspire a quality of life that can have a ripple effect; as noted by Omar bin Sultan Al Olama, the Minister of AI,

Even before I was appointed as the minister, we had a minister of happiness, our goal was not only to make the people satisfied, but also happy. If people are happy they will be more productive, give back more economically and have a better quality of life.¹⁶⁸

The ability to embrace AI may also be related to the court structure in Dubai, where issues brought before the court are

[h]eard by one or more judges. Juries are not used. Further, unlike in some western jurisdictions, there is no system of precedent in Dubai or the UAE. However, judgements of some higher courts are published, not because they

¹⁶⁶ "Ai Lab," Smart Dubai, accessed July 15, 2019, <https://www.smartdubai.ae/initiatives/ai-lab>.

¹⁶⁷ Christopher Mims, "When Battlefield Surveillance Comes to Your Town," *Wall Street Journal*, August 3, 2019, <https://www.wsj.com/articles/when-battlefield-surveillance-comes-to-your-town-11564805394>.

¹⁶⁸ Roy, "Can AI Bring You Happiness?"

are binding on lower courts, but in order to provide useful evidence of future judicial interpretation and practice.¹⁶⁹

If a matter comes before the court that involves AI, judges can hear the case and make decisions without being tied to precedents from past cases; this allows for a less restrictive decision-making process, though the process can also be considered arbitrary—dependent upon the whim of the judge who is issuing the decision.

Here in the United States, the use of AI-enabled technology by law enforcement elicits very different reactions. For example, predictive policing is thought by some to be a biased practice that has been historically engrained into policing strategies.¹⁷⁰ Critics of AI technology argue that the algorithms that are used to predict crime discriminate and only offer predictions against marginalized communities.¹⁷¹ AI technology is sometimes used without the consent or consideration of communities who are impacted by it most. To illustrate this point, consider the case of Palantir, a predictive policing software, and the New Orleans Police Department:

In January 2013, New Orleans would also allow Palantir to use its law enforcement account for LexisNexis' Accurint product, which is comprised of millions of searchable public records, court filings, licenses, addresses, phone numbers, and social media data. The firm also got free access to city criminal and non-criminal data in order to train its software for crime forecasting. Neither the residents of New Orleans nor key city council members whose job it is to oversee the use of municipal data were aware of Palantir's access to reams of their data.¹⁷²

Although the use of the Palantir software resulted in several indictments against high-ranking gang members, it was not without controversy. The software was used secretly,

¹⁶⁹ Andrew Tarbuck and Chris Lester, *Dubai's Legal System: Creating a Legal and Regulatory Framework for a Modern Society* (Dubai, UAE: Motivate Publishing, 2009), 8, <https://www.lw.com/thoughtleadership/dubai-legal-and-regulatory-system>.

¹⁷⁰ Nathan Munn, "This Predictive Policing Company Compares its Software to 'Broken Windows' Policing," *Motherboard*, June 11, 2018, https://www.vice.com/en_us/article/d3k5pv/predpol-predictive-policing-broken-windows-theory-chicago-lucy-parsons.

¹⁷¹ Munn.

¹⁷² Ali Winston, "Palantir Has Secretly Been Using New Orleans to Test its Predictive Policing Technology," *The Verge*, February 27, 2018, <https://www.theverge.com/2018/2/27/17054740/palantir-predictive-policing-tool-new-orleans-nopd>.

without the community's knowledge. This made the community suspicious, along with those who were affected by the predictions. Subsequently, the continued use of this technology caused outrage. To emphasize this outrage, the former mayor of New Orleans, Mitch Landrieu, stated,

I'm not saying these tools can't be utilized. But no one gets to be part of the discussion, at the very least, independent oversight should have some information. Had they shared some info with us, we might be able to allay some fears. Instead, everything is in a box and it's suspicious.¹⁷³

Because Dubai has embraced AI technology as a whole, the Police Force's practices are less likely to be seen as discriminatory. Also, the manner in which government representatives support and inform their constituents can have a profound impact on acceptance of initiatives and programs. In Dubai, the support for AI technology comes from the top, which lessens citizens' fear and skepticism. Skeikh Mohammed bin Rashid Al Maktoum—who, as mentioned, serves the roles of vice president and prime minister of the UAE and is also the ruler of Dubai—has “always emphasized that the government is an authority FOR the people and not over them.”¹⁷⁴ This philosophy stresses the importance of citizens' rights and the importance of their role in technological endeavors. In contrast, the New Orleans example illustrates that if AI technology is implemented without the knowledge of the citizens, the result may be distrust and a negative perception of law enforcement's use of any future technology.

Transparency about how a technology is implemented is also important in Dubai, and many U.S. law enforcement agencies use social media to build trust and enhance transparency as it relates to crime in a community. This same philosophy should be used when implementing a technology. For example, the Elgin Police Department in Illinois began researching body-worn cameras several years before implementing the BWC program in 2017. Throughout the research phase, the department discussed concerns such as cost, time, expectations, and officer acceptance. When the decision was made to

¹⁷³ “How a Tech Firm Brought Data and Worry to New Orleans Crime Fighting,” NOLA.com, March 12, 2018, https://www.nola.com/crime/index.ssf/2018/03/palantir_new_orleans_nopd.html.

¹⁷⁴ Government of Dubai, “Dubai Plan 2021.”

implement BWCs, a committee was formed that included officers, supervisors, and civilian staff members. The committee researched types of BWCs, freedom of information laws, and the practical aspects of having a BWC program. The police department also reached out to key stakeholders such as the State's Attorney's Office, City Council, and the community, to inform all parties about the intention to bring BWCs to the police department. This early communication about the project helped ensure that concerns were addressed and established open lines of communication for input from stakeholders, especially from the community. The police department held several conversations with the community and used social media to advertise these opportunities (see Figures 17 and 18), which were extremely successful.

As the Elgin Police Department's BWC endeavor progressed, the agency continued to use social media to promote it and created a webpage to house all pertinent information for easy accessibility by the public. Overall, the implementation of the BWC program was accepted within the community; Figure 19 shows positive feedback from the police department's announcement that the BWCs had arrived and that training was underway.

 **Elgin Police Department** ✓
January 24, 2016 · 🌐

REMINDER: Tomorrow night at our Chief's monthly meeting, Commander Lalley will be giving an update regarding our body-worn camera initiative. Attendees will get to check out the cameras we've been testing and hear our officers talk about their experiences so far. We hope you can be there!

Event information: https://www.facebook.com/events/812845625492335/?ref=98&action_history=null



Chief's Community Meeting
Elgin PD | 151 Douglas Ave | Elgin
Monday | January 25, 2016 | 6 p.m.

MON, JAN 25, 2016

Chief's Community Meeting

Elgin Police Department · Elgin, IL

11 people interested

★ Interested

Figure 17. Facebook Event Posted by Elgin, Illinois, Police Department¹⁷⁵

¹⁷⁵ Source: Elgin Police Department, “REMINDER: Tomorrow night at our Chief’s monthly meeting,” Facebook, January 24, 2016, <https://www.facebook.com/ElginPolice/posts/1060632227291980>.

Police and Community Conversation
****Police use of body cameras will be discussed****
When: Wednesday, September 16, 2015, 7:00 p.m.
Where: Second Baptist Church, 1280 Summit St., Elgin

Everyone is welcome to attend this free event to speak openly with Elgin officers

Sponsored by the City of Elgin, Elgin Police Department, Clergy Coalition of Elgin and the Elgin Human Relations Commission

Elgin
THE CITY IN THE SUBURBS™

Elgin Police Department
September 10, 2015

We just posted one more event, it is another Police and Community Conversation that will be hosted on Wednesday, September 16th, 7 p.m., at the Second Baptist Church of Elgin, IL (1280 Summit St., Elgin). We will be inviting discussion regarding police use of body worn cameras, we hope you can attend - it is open to all.

<https://www.facebook.com/events/962737880415449/>

17 2 Comments 25 Shares

Like Comment Share

Most Relevant

I am for body cameras for the police. There are too many men in blue trying to hurt the people. Do it. I vote yes.
Like Reply 4y

I AM FOR BODY CAMERAS FOR THE POLICE!!!! THERE ARE TOO MANY PEOPLE TRYING TO HURT THE MEN IN BLUE. DO IT!!!! VOTE YES!!!
Like Reply 4y

Write a comment...

Figure 18. Facebook Post from Elgin, Illinois, Police Department¹⁷⁶

¹⁷⁶ Source: Elgin Police Department, “We just posted one more event, it is another Police and Community Conversation,” Facebook, September 10, 2015, <https://www.facebook.com/ElginPolice/photos/a.547985318556676.1073741825.358476524174224/997736386914898/?type=3&theater>.

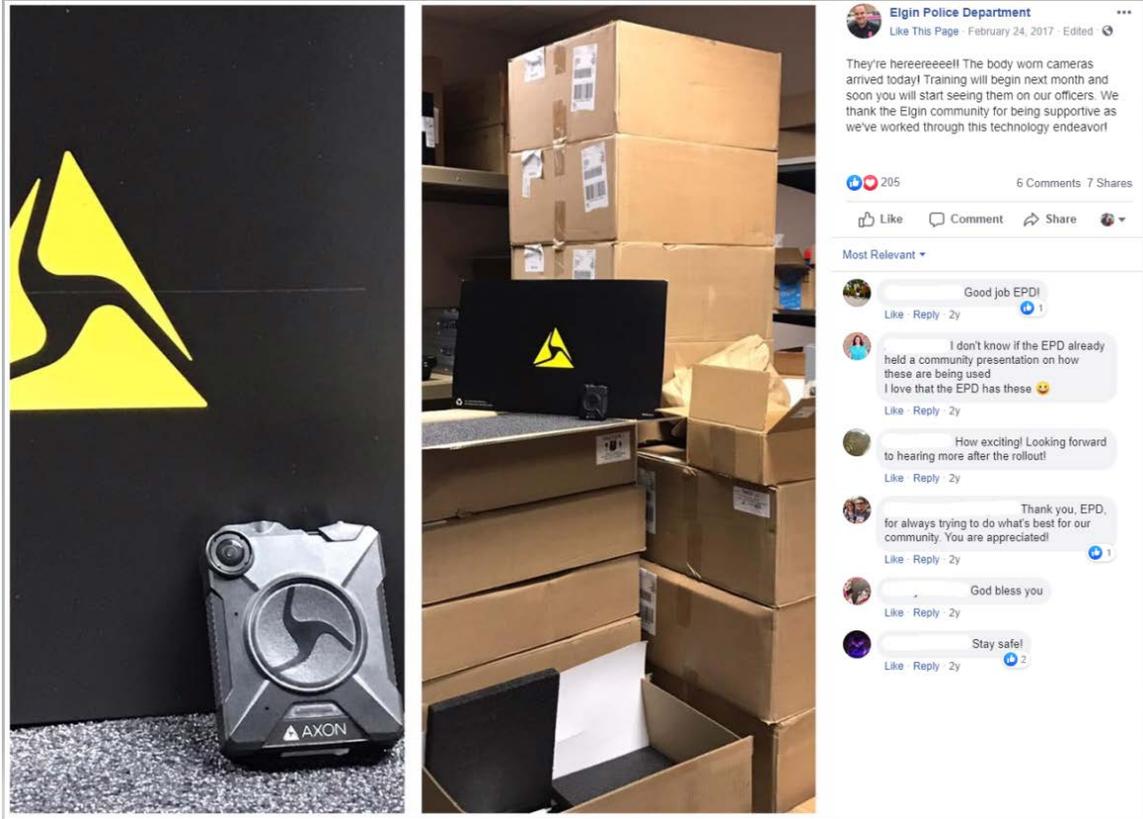


Figure 19. Facebook Photo Posted by Elgin, Illinois, Police Department¹⁷⁷

While individual law enforcement agencies in the United States are working to gain community acceptance of AI, Dubai is ahead of the game. The manner in which Dubai citizens have accepted AI technology has allowed the Dubai Police to implement programs much more quickly. This acceptance stems from a transparent and supportive government, which can lay the foundation for a successful AI initiative in a law enforcement agency.

¹⁷⁷ Source: Elgin Police Department, "They're hereeeeeee!!The body worn cameras arrived today!" Facebook, February 24, 2017, <https://www.facebook.com/ElginPolice/photos/a.547985318556676.1073741825.358476524174224/1375630245792175/?type=3&theater>.

3. Future Plans

The Dubai Police's future plans for AI include uses that, if implemented in the United States, would cause major concern. One of Dubai's goals is particularly ambitious: the police have publicly stated that they will be able to predict crime and virtually eliminate all crime by 2031. Brigadier Al Razouqi explains that this will be possible for the Dubai Police because they are relying on AI and data analysis, which they claim will help them predict crime and ultimately prevent it from occurring.¹⁷⁸ The future plans to have the city connected through facial-recognition-enabled cameras and sensors on vehicles—an internet of things—means the future of Dubai is bright. What is more interesting to note is that this future has gained acceptance by the citizens of Dubai.

In the United States, if a statement about using AI to predict and eliminate crime were to be made by any police agency, there would be hesitance, criticism, skepticism, and many roadblocks to overcome. By embracing citizen services first, the Dubai Police has paved the way for a citizenry attitude that likewise embraces law enforcement's technological endeavors and views the endeavors as beneficial to how people live, work, and play. A safe community cannot be achieved without the participation of its citizenry. The Dubai Police has made it known that the goal of eliminating crime is one that can be achieved through AI *and* the acceptance of its use by citizens.

B. CONCLUSIONS AND RECOMMENDATIONS

The Dubai Police embrace AI, and this has allowed for a progressive law enforcement department that works with its citizenry to incorporate technology. The agency's overall approach, the acceptance of AI technology by the citizens, and Dubai's future plans for AI have created an environment for this technology to thrive. This approach is one to be envied and should be what law enforcement agencies in the United States strive for when venturing into AI initiatives. This research has focused on how AI can be incorporated into law enforcement in the United States based on best practices from Dubai and domestic experiences, with fair-minded consideration of challenges, in an effort to

¹⁷⁸ Ali Al Shouk, "Dubai Police to Predict Crimes by 2031," Gulf News, November 19, 2018, <https://gulfnews.com/uae/dubai-police-to-predict-crimes-by-2031-1.60459862>.

provide a model for implementation. This section provides that model, along with guidance for U.S. law enforcement agencies on the considerations and applications mentioned throughout the research that can be used to implement AI technology.

Critics of AI argue that this technology is “ushering in a surveillance state” where “government agencies and corporations [will have] tools that make it so easy to learn about your private behavior.”¹⁷⁹ For AI to evolve, machines

need massive data sets, which is why the *Economist* called data the new oil. If you have data, you can create AI, and therefore everything we do is of value to someone; collection and sale of our data is big business.¹⁸⁰

How this data is obtained, managed, used, and disseminated will make the difference for the successful implementation of AI into a law enforcement agency. Along with data management, law enforcement agencies should consider community engagement, use of social media, and transparency when implementing AI. Agencies should also highlight several applications that will incorporate AI, such as automating routine police functions, aiding investigations, and protecting against liability.

1. Model for Implementation

For any law enforcement agency in the United States, the key to implementing AI into operations begins with taking the lead from companies who have already ventured into this arena. For example, Microsoft claims that moral principles and “timeless values” must guide the use of AI to keep the technology “human-centered.”¹⁸¹ Microsoft also highlights six principles that organizations should employ when using AI: fairness, reliability, privacy and security, inclusiveness, transparency, and accountability.¹⁸²

¹⁷⁹ Charles, “AI and Law Enforcement” 79.

¹⁸⁰ Firth-Butterfield, “Artificial Intelligence and the Law,” 3.

¹⁸¹ “The Future Computed: Artificial Intelligence and its Role in Society: Executive Summary” Microsoft, January 2018, https://3er1viui9wo30pkxh1v2nh4w-wpengine.netdna-ssl.com/wp-content/uploads/2018/01/Executive-Summary_The-Future-Computed.pdf.

¹⁸² Microsoft.

Overall, when organizations that engage in AI initiatives understand the challenges but work to embrace and overcome them, they will flourish. What is of utmost importance is that AI endeavors are available to everyone, with a sense of shared responsibility and oversight—in other words, they must be democratized. When everyone feels ownership of AI, the technology becomes less intrusive and possibly less frightening.

J. Charles argues that when law enforcement agencies decide to use AI, they should be required to notify citizens in their community.¹⁸³ He also argues that, for AI to work in a law enforcement agency, “it has to be integrated like any other embedded system.”¹⁸⁴ Technology should be deployed in a transparent manner that maintains the trust of the community. The next sections provide a roadmap toward this end.

a. Community Engagement and Transparency

It is crucial for law enforcement agencies to be transparent when embarking on technology-related ventures that involve AI. Transparency means not only notifying the community that an agency is using a certain technology but also explaining what that technology can do and how, and how data will be gathered. The case of the Palantir predictive policing software and the New Orleans Police Department is an example of precisely what *not* to do. Although the software allowed for several indictments against high-ranking gang members, the AI was used without the public’s knowledge, and therefore created controversy. Sometimes the means do not justify the ends. In contrast, when the Elgin Police Department purchased PredPol, the public was notified via an open city council meeting, and news articles were disseminated to inform the public. If a community believes that law enforcement is not willing to be upfront about the technology it uses, it is not necessarily the technology that will be the issue, but rather the manner in which it is used, and to what end. Unfortunately, when it is reported that “the city of New Orleans and Palantir have not responded to questions about the program’s current status,” the erosion of trust has begun.¹⁸⁵

¹⁸³ Charles, “AI and Law Enforcement,” 79.

¹⁸⁴ Charles, 80.

¹⁸⁵ Charles.

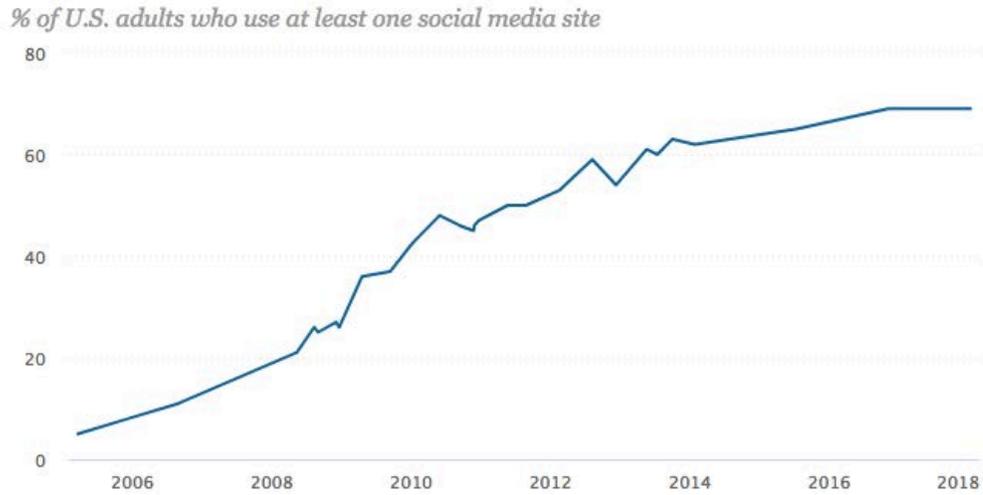
The use of technology in law enforcement should be approached cautiously and, if possible, law enforcement agencies should have a means to build trust with the communities they serve. Transparency in implementation is important and can provide the community with reassurance that the law enforcement agency has thoughtfully considered the public's concerns. An example of this type of approach was discussed previously in the implementation of a BWC program at the Elgin, Illinois, Police Department. Other agencies that wish to implement AI technology can use this example as a model. When law enforcement agencies constantly engage their communities, they can reduce fears, quell concerns, and form a partnership in which the community provides input and suggestions for the agency to consider. This approach can pave the road for a successful AI initiative.

b. Social Media

When law enforcement agencies are venturing into AI initiatives, social media can provide the avenue the agency needs to give information to citizens.¹⁸⁶ Figures 20–22 show the percentage of adults in the United States who use social media, the age of users, and the sites used most often. It is evident that social media use is commonplace. Law enforcement has also embraced social media to communicate information such as crime trends, in-progress incidents, and wanted subjects, and to recruit and announce events. Social media can also be the nexus for sharing information about technological initiatives that an agency is implementing. In 2016, the International Association of Chiefs of Police (IACP) and the Urban Institute conducted a survey of 539 law enforcement agencies about the use of social media.¹⁸⁷ The survey revealed the most common functions of social media, listed in Figure 23. Eighty-nine percent of agencies use social media for community engagement and outreach. This approach should be a key part of implementing any AI initiative and can help the community alleviate fears, ask questions, and voice concerns.

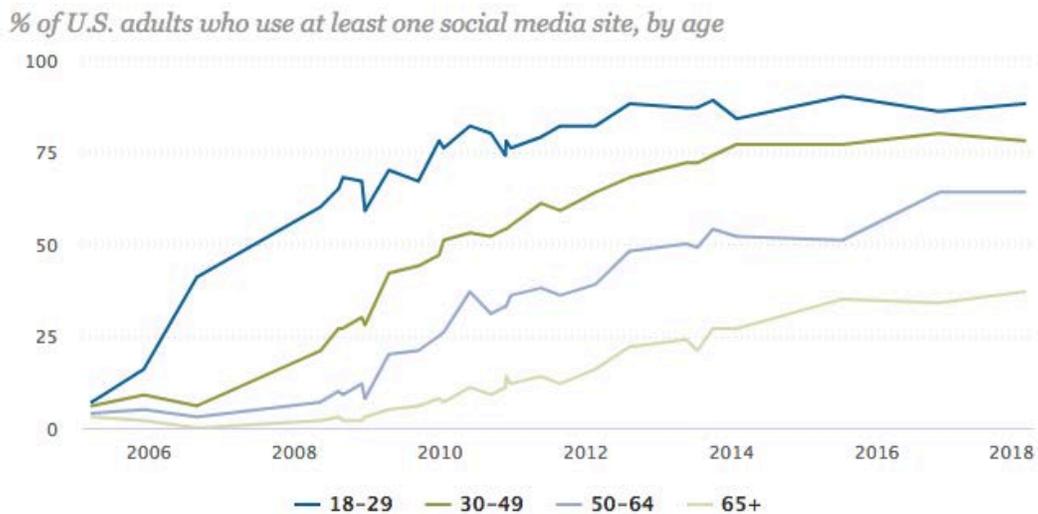
¹⁸⁶ Social media includes forms of electronic communication (such as websites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (such as videos). Social media platforms include Facebook, Pinterest, Twitter, Snapchat, Instagram, YouTube, LinkedIn, and WhatsApp, to name a few. Merriam-Webster, s.v. “Social Media,” accessed June 9, 2018, [https://www.merriam-webster.com/dictionary/social media](https://www.merriam-webster.com/dictionary/social%20media).

¹⁸⁷ KiDeuk Kim, Neal Mohr, and Ashlin Oglesby, “2016 Law Enforcement Use of Social Media Survey” (report, International Association of Chiefs of Police and the Urban Institute, 2017).



Source: Surveys conducted 2005-2018.

Figure 20. U.S. Adults Who Use Social Media¹⁸⁸

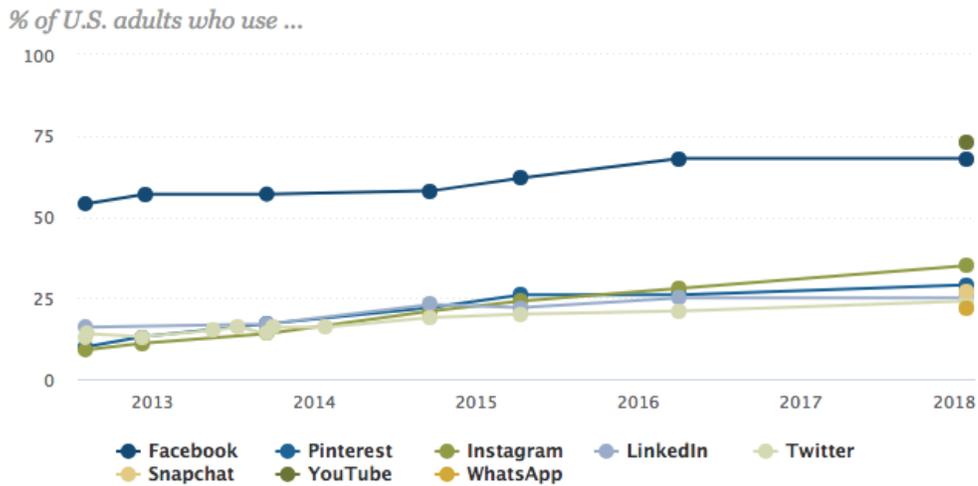


Source: Surveys conducted 2005-2018.

Figure 21. Adults Who Use At least One Social Media Site¹⁸⁹

¹⁸⁸ Source: “Social Media Fact Sheet,” Pew Research Center, February 5, 2018, <http://www.pewinternet.org/fact-sheet/social-media/>.

¹⁸⁹ Source: Pew Research Center.



Source: Surveys conducted 2012-2018.

Figure 22. Types of Social Media Used¹⁹⁰

What Does Your Agency Use Social Media For?

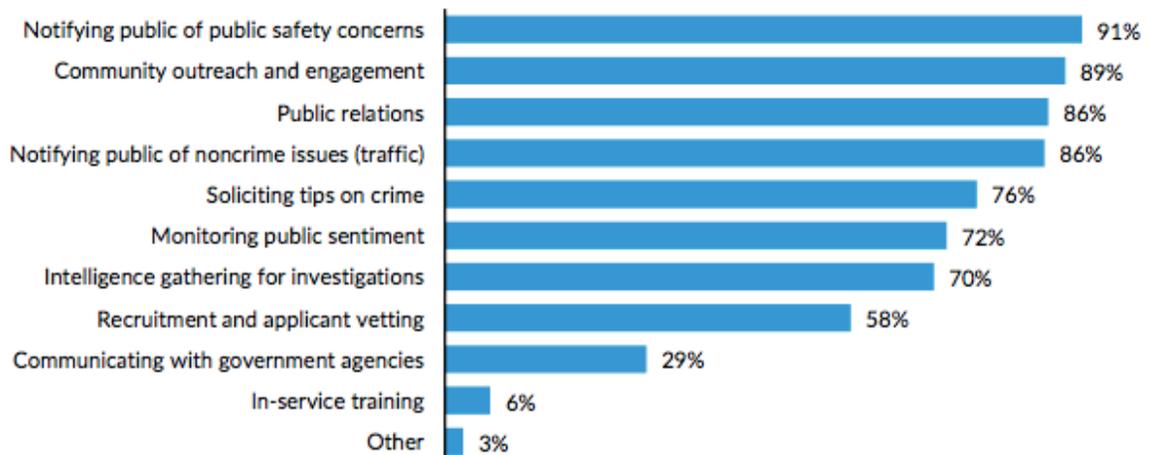


Figure 23. Law Enforcement Agencies' Use of Social Media¹⁹¹

¹⁹⁰ Source: Pew Research Center.

¹⁹¹ Kim, Mohr, and Oglesby, "2016 Law Enforcement Use of Social Media Survey," 3.

Social media can make a community aware of the agency's intentions and also serve as the mechanism that gets the community involved in AI initiatives. As observed with the Dubai Police, social media can promote enthusiasm for the technology and also highlight how the technology will simplify and enhance the quality of life for citizens. Social media should be used to open the lines of communication between the agency and its citizens, and the agency's social media posts should be thoughtfully considered to ensure they convey the proper message.

2. Applications

Law enforcement agencies seeking to implement AI technologies should be aware of the applications of its use so that, during implementation, the benefits can be highlighted to counter concerns. Applications of AI technology include automating routine police functions, aiding investigations, and protecting against liability.

a. Automating Routine Police Functions

A police officer's day is filled with many tasks; one task that can be time-consuming is writing reports. AI technology, however, can automate report-related routine functions. For example, a police officer who is wearing a BWC can use facial and voice recognition via AI to produce a report that has translated the captured audio and video automatically and instantaneously. Kowalyk believes that, through this innovation, law enforcement can capitalize on AI technology to produce complete documentation for courts and other law enforcement partners in an almost real time.¹⁹² Kowalyk also gives several examples of how embracing AI technology can ease other routine functions while also improving decision-making and transparency for an organization:

- Incident reports related to use of force, whether or not charges are brought, can be reviewed electronically by an objective third party as part of an enhanced accountability process.

¹⁹² Kowalyk "Better Days Ahead," 27.

- Real-time database updates, connected to computer-aided dispatching, can provide officers with potentially life-saving information about subjects with whom they have come into contact.
- Enterprise risk management, supported by algorithms that drill into an organization's various human resources and administrative databases, including record management systems, can make connections between data points that would otherwise remain undetectable.
- By tracking court disclosure packages from arrest to final court disposition, police agencies can learn from the outcomes of their investigations as part of a closed-loop learning process.
- A new generation of records management systems paves the way for implementation of new crime classifications that provide for a more granular analysis of crime.¹⁹³

Another area where AI can be of great assistance is illustrated by the Dubai Police's Smart Police Stations. These stations not only automate routine police functions but also allow for the reallocation of an officer's time. The extra time can then be used for community engagement functions such as events, programs, and meetings, where relationship-building can be fostered.

b. Aiding Investigations

AI can aid criminal investigations by streamlining and enhancing techniques. The University of Virginia and the local police department nearby are partnering on a project called the Regional Crime Analysis Project (ReCAP). ReCAP is designed to be used by crime analysts to examine violent crime.¹⁹⁴ This project uses AI to identify the time a crime occurs, the space in which it occurs, and the methods by which crime happens in

¹⁹³ Kowalyk, 27.

¹⁹⁴ Charles, "AI and Law Enforcement," 80.

order to identify noticeable patterns.¹⁹⁵ This program was in development for a few years and was recently deployed. Whether or not it will be successful remains to be seen. The build team stresses that it can be difficult to take raw data, enter it into a program, and then find useful patterns that can help to solve crime. In addition, the data acquisition has also been a point of contention for the participating agencies, who cannot reach consensus about what data should be used. The design process should have thought about the end user first, considering what would be user-friendly, relevant, and accurate. As Charles states, “as in other AI domains, the key to success or failure for AI in law enforcement is the human factor. One way or another it always come back to the users—their needs, knowledge and perceptions.”¹⁹⁶

AI has been used by federal agencies as well. For example, the Department of the Treasury’s Financial Crimes Enforcement Network has a system known as the Fin-CEN AI System (FAIS), which reviews cash transactions at banks that appear to be suspicious. Any cash transaction that is over \$10,000 and occurs at a bank, currency exchange, or casino must be reported through a cash transaction report, which is then analyzed through the AI-enabled FAIS to look for patterns and similar relationships that appear suspicious.¹⁹⁷ This AI-enabled technology has allowed law enforcement to analyze across numerous sources at a speed which would be impossible for a human. FAIS has led to numerous successes in identifying connections between individuals and fraudulent operations in transactions.¹⁹⁸

Private companies also use AI for fraud detection. In Texas, the Medicaid Fraud Detection system leverages AI to review claims submitted for potential fraud, saving the state of Texas millions of dollars.¹⁹⁹ Credit card company Visa uses similar technology—called the Cardholder Risk Identification System (CRIS)—to look at purchasing activity

¹⁹⁵ Charles.

¹⁹⁶ Charles, 80.

¹⁹⁷ Charles, 77.

¹⁹⁸ Charles, 77.

¹⁹⁹ Charles, 78.

and analyze a cardholder's behavior, looking for transactions that seem suspicious based on prior, legitimate purchases.²⁰⁰ The notion is that it may be easy to steal a credit card number, but it is not easy to steal someone's behavior. AI provides a secure and safer way for cardholders to conduct their transactions. At the University of Arizona, they work to leverage AI to analyze a person's behavior to try to identify deception.²⁰¹ AI helps to analyze a subject's eye pupil size, tone of voice, and the type of words an individual chooses to use. This type of AI could be used by law enforcement during interviews and interrogations. Finally, Santa Clara University in California is working with the Santa Cruz Police Department on AI-enabled software that borrows from predictive earthquake models that focus on aftershocks. This software uses a premise from crime-prediction research, which has found that violence causes a domino effect: if a crime occurs in one area, it is likely to occur in areas nearby due to relationships between those involved in the crimes. For example, a gang-motivated shooting in one area may be followed by another gang-related shooting in a nearby area due to rival gang membership and territory.²⁰²

c. Protecting against Liability

Most law enforcement agencies incur liability when an officer's actions are illegal or violate an individual's constitutional rights. AI-enabled technology can help reduce this liability by looking at an officer's past behavior to predict future behavior that may pose a significant risk. Simon Stern explains this concept, stating,

a police department's "internal affairs divisio [n] ... could examine stop, search, arrest, and use-of-force records by race," which could then be used to "investigat [e] ... statistical outliers." A police department taking a pre-emptive "public health" approach might use "predictive modelling techniques" to identify those officers who pose a significant risk of "having unlawful force or race discrimination complaints brought against them,"

²⁰⁰ Charles.

²⁰¹ G. Lawton, "In The News," *IEEE Intelligent Systems* 26, no. 6 (November 2011): 6, <https://doi.org/10.1109/MIS.2011.102>.

²⁰² Lawton, 5.

giving them “additional training to head off the conduct before it occurs.”²⁰³

A law enforcement agency could review an officer’s behavior and mitigate risk by introducing training before a problematic incident occurs. This future of AI-enabled policing would sort through vast amounts of data about an officer and his or her interactions and, by doing so, can make communities safer and reduce liability for both the individual officer and the agency as a whole. However, according to *Police Chief* magazine, although AI can take large amounts of information and find links rapidly and accurately, the use of AI does not guarantee protection against liability.²⁰⁴ J. Charles cautions that “people who think AI tools are a silver bullet are going to be disappointed. You still have to have adequate investigators and enforcement personnel to follow up on the leads generated by the system.”²⁰⁵

If not used properly, the cascading promise of AI can carry a great deal of risk and unintended consequences. Some law enforcement officers may be unwilling to embrace AI, and some community members may believe that their privacy is being violated and the technology is being used without justification. These concerns could cause irreversible damage to the agency, its officers, and the community. Instead of reducing an agency’s liability, if not used carefully, AI could increase that liability exponentially.

C. FINAL THOUGHTS

In *A Brave New World*, Aldous Huxley wrote about a futuristic society where humans are grown in labs and individuality and freedom no longer exist. In this world, “technological progress has merely provided us with more efficient means for going backwards.”²⁰⁶ Although technological advances in policing have provided the means for solving crimes, if AI is not used appropriately, the unintended consequences could corrode

²⁰³ Simon Stern, “Introduction: Artificial Intelligence, Technology, and the Law,” *University of Toronto Law Journal* 68, Supplement 1 (2018): 9, <https://doi.org/10.3138/utlj.2017-0102>.

²⁰⁴ Kowalyk “Better Days Ahead,” 27.

²⁰⁵ Charles, “AI and Law Enforcement,” 79.

²⁰⁶ “Aldous Huxley on Technological Progress,” Huxley.net, accessed June 10, 2018, https://www.huxley.net/ah/aldous_huxley.html.

the very things the technology was intended to enhance—trust, confidence, and legitimacy—providing us with the “more efficient means for going backwards.”

As technology progresses, law enforcement will undoubtedly continue to use it. And law enforcement will need to be vigilant about how the next generation of technology is implemented and used. New and emerging technologies have been steadily introduced into our everyday lives, and have slowly begun integrating into law enforcement.

Any law enforcement agency that chooses to venture into AI should take cues from private organizations that already have made the transition. Microsoft provides guidance on how to foster an AI-ready culture and stresses that organizations need to embrace data analytics, and foster an environment where AI initiatives are part of the entire organization.²⁰⁷ As Brian Jackson notes, “Information technology has affected the practice of policing in many ways, but for the public, it has given residents new awareness of how police are doing their jobs.”²⁰⁸ AI will one day give residents a new awareness of how law enforcement officers are doing their jobs, and may also provide information on how a policing decision is made. AI will allow for decisions to be analyzed and subsequently changed for the better.

Among Aesop’s famous fables, “The One-Eyed Doe” is particularly prophetic:

A Doe had the misfortune to lose one of her eyes, and could not see any one approaching her on that side. So to avoid any danger she always used to feed on a high cliff near the sea, with her sound eye looking towards the land. By this means she could see whenever the hunters approached her on land, and often escaped by this means. But the hunters found out that she was blind of one eye, and hiring a boat rowed under the cliff where she used to feed and shot her from the sea. “Ah,” cried she with her dying voice, “You cannot escape your fate.”²⁰⁹

²⁰⁷ “Discover Three Characteristics That Foster an AI-Ready Culture,” Microsoft, accessed April 21, 2019, <https://api.itweb.co.za/download/8d08723ef10d874e35b5ec8bcb5e8a8155ffc13b>.

²⁰⁸ Brian A. Jackson, *Respect and Legitimacy—A Two-Way Street: Strengthening Trust between Police and the Public in an Era of Increasing Transparency* (Santa Monica, CA: RAND, 2015), 2, <https://www.rand.org/pubs/perspectives/PE154.html>.

²⁰⁹ Aesop, *Aesop’s Fables*, Kindle edition (Houston TX: Paper Less Readers Club), locations 370–37.

The moral of this fable is that trouble may come from an unexpected direction. This lesson can be applied to law enforcement's use of technology. Technology has greatly enhanced agencies' abilities to solve crimes, and can help provide legitimacy for an agency, accountability to citizens, and the foundation for trusting relationships. However, law enforcement agencies in the United States that wish to move forward with AI-enabled technology need an established framework so that they can spot trouble coming from an unexpected direction. The framework should include input from all stakeholders and a robust explanation given about the intended use of the technology. The implementation phase also should allow for constant evaluation and feedback.

As illustrated in Figure 24, the factors that can contribute to the adoption and impact of technology on an agency are many, and all should be considered to provide for a successful outcome.



Figure 24. Factors Influencing Technology in an Agency²¹⁰

Janet B.L. Chan studies the evolution of technology from routine purposes to more strategic, higher-level ones. She stresses that technology has not only redefined the daily routines of law enforcement agencies but also has allowed for a greater positive outcome that impacts communities—such as crime prevention, problem solving, and appropriate use of resources.²¹¹ These outcomes are possible due to AI-enabled technology in law enforcement agencies. To ensure a successful outcome, agencies should encourage community involvement and transparency, and continuously review and adapt strategies so that they are responsive to concerns.

²¹⁰ Source: Strom, “Impact of Technology on Policing Strategy,” 7-5.

²¹¹ Janet B.L. Chan, “The Technological Game: How Information Technology Is Transforming Police Practice,” *Criminal Justice* 1, no. 2 (May 2001): 156, <http://search.proquest.com/docview/38237152/>.

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