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9 October 2020

CHN200324.E

China: The use of computerized identity verification and facial recognition technology, including at airports and other transportation and public spaces (2019–October 2020)
Research Directorate, Immigration and Refugee Board of Canada

1. Overview

According to the *Diplomat*, a current affairs magazine for the Asia-Pacific region (*The Diplomat* n.d.), facial recognition technology has become an inevitable part of everyday life in China, "[f]rom picking up medication, to taking public transportation, to buying a cellphone" (*The Diplomat* 7 Mar. 2020). Similarly, *Time* notes the use of facial recognition to "access office buildings, snare criminals and even shame jaywalkers at busy intersections" (*Time* 21 Nov. 2019). According to data published by Comparitech, a British website "providing information, tools, and comparisons" to consumers regarding tech services (Comparitech n.d.), eight of the ten most surveilled cities in the world are in China, based on the number of cameras per 1,000 people, with Taiyuan [in the Shanxi province] being the first with 119.57 cameras per 1,000 people (Comparitech 22 July 2020). The *Diplomat* indicates that the number of facial recognition cameras in China has grown from 176 million in 2017 to

626 million in 2020 (*The Diplomat* 7 Mar. 2020). The *Wall Street Journal* (*WSJ*) notes that there is one camera for every 4.1 people (*WSJ* 6 Dec. 2019). Sources report that, since 1 December 2019, mobile phone users are required to have their face scanned to register for mobile services (*SCMP* 1 Dec. 2019; Reuters 2 Dec. 2019; *MIT Technology Review* 2 Dec. 2019). According to the *Atlantic* magazine, this means that a phone's data can be matched to a specific face (*The Atlantic* Sept. 2020).

According to sources, the Chinese police have been testing a technology that identifies individuals by the way they walk, analyzing the shape and movements of their silhouette (AP 6 Nov. 2018; *The Independent* 26 Feb. 2019; *SCMP* 23 Oct. 2019). Sources specify that the software does not need specialized equipment, as it uses the data provided by surveillance cameras (AP 6 Nov. 2018; *The Independent* 26 Feb. 2019). Sources also report that Chinese technology firms claim that their facial recognition system is able to identify individuals wearing masks (*Wired* 1 May 2020; Reuters 9 Mar. 2020).

However, according to a report on smart cities in China prepared for the US-China Economic and Security Review Commission [1], facial recognition technology still presents technical difficulties, such as requiring "passive face-matching" in order to identify a person or "impossibly high data bandwidth requirements for integration with other systems" (Atha, et al. Jan. 2020, 50). National Public Radio (NPR), an American "independent, nonprofit media organization" (NPR n.d.), also notes that despite the technology's increasing accuracy, it depends on weather and lighting conditions (NPR 16 Dec. 2019). *Wired*, an American magazine on technology (*Wired* n.d.), writes that reports on facial recognition's effectiveness to correctly identify people wearing masks are "mixed" (*Wired* 1 May 2020).

1.1 Legislation

The Center for Strategic and International Studies (CSIS), an American "nonprofit policy research organization" (CSIS n.d.), indicates that the use of facial-recognition technology "is regulated by a broader data protection framework – the Cybersecurity Law of the People's Republic of China" and that biometric data is covered by the 'Personal Information Security Specification'" (CSIS 4 May 2020). Similarly, the *Diplomat* reports that the Personal Information Security Specifications protect the biometric data collected by facial recognition surveillance systems (*The Diplomat* 7 Mar. 2020). The Specification provides "guidelines on data-handling and protection to prevent [personally identifiable information (PII)] – including biometrics – from illegal collection, abuse, and access," but is not compulsory (CSIS 4 May 2020). The *Diplomat* specifies that the regulation says that "collection of [personal information] should be for 'legal, justified, necessary, and specific purposes,' often requires consent, and must be kept secure" (*The Diplomat* 7 Mar. 2020). According to an English translation provided on the website of New America, a Washington, DC "think and action tank" that

develops "legal, political and technological tools to build democratic capacity" (New America n.d.), the Specification provides the following "basic principles" regarding the process of personal information – including biometrics data:

3.1 Personal Information 个人信息

All kinds of information, recorded by electronic or other means, that can be used, alone or combined with other information, to identify a specific natural person or reflect activities of a specific natural person.

Note 1: PI [personal information] includes names, dates of birth, identity card numbers, biometric information, addresses, telecommunication contact methods, communication records and contents, account passwords, property information, credit information, location data, accommodation information, health and physiological information, transaction data, etc.

…

4. Basic Principles of Personal Information Security

PI controllers should follow the basic principles below when processing PI:

a. Commensurability of Powers and Responsibilities Principle: Bear responsibility for damage to the lawful rights and interests of the PI subject caused by PI processing.
b. Purpose Specification Principle: Process PI for legal, justified, necessary, and specific purposes.
c. Consent Principle: Obtain authorized consent from the PI subject after expressly providing the PI subject with the information including the purpose, method, scope, and rules of the processing.
d. Minimization Principle: Unless otherwise agreed by the PI subject, only process the minimum types and quantity of PI necessary for the purposes for which the authorized consent is obtained from the PI subject. After the purposes have been achieved, the PI should be deleted promptly according to the agreement.
e. Openness and Transparency Principle: The scope, purposes, and rules, etc., of PI processing should be open to public in an explicit, intelligible, and reasonable manner, and outside supervision should be accepted.
f. Ensuring Security Principle: Possess the appropriate security capacity taking into account the security risks [the controller] faces, and implement sufficient management and technical measures to safeguard the confidentiality, integrity, and availability of PI.
g. Subject Participation Principle - Provide the PI subject with means to access, correct, and delete the PI, to withdraw consent, and to close accounts. (China 30 Jan. 2019)

The *Diplomat* notes that the "current reality of the Chinese facial recognition ecosystem" does not echo the legislation's principle, as consent to biometric data collection of "sensitive biometric data" and "sufficient data security" are lacking (*The Diplomat* 7 Mar. 2020).

Similarly, a law professor at a Chinese University, quoted in the Hong Kong-based *South China Morning Post* (*SCMP*), noted during a symposium on facial recognition technologies that while people's consent to collect their personal data is required by the Chinese laws and regulations, "in reality, facial recognition technologies are widely used while the public rarely knows about them" (*SCMP* 1 Dec. 2019).

1.2 Integration of Facial Recognition Technology with Personal Information

Australia's Department of Foreign Affairs and Trade (DFAT) indicates that since 2016, according to media reports, Chinese law enforcement agencies have been integrating "photo databases, artificial intelligence and facial recognition technology installed in surveillance cameras to track down criminal suspects and 'destabilising agents' in society" (Australia 3 Oct. 2019, para. 2.57). Similarly, in a feature story on surveillance in China, NPR reports that a surveillance dataset on "hundreds of people in Beijing," discovered by a security firm in spring 2019, included their identity cards and criminal history, as well as facial recognition data specifying "if they were bearded or wearing a mask, or even what ethnicity they were" (NPR 16 Dec. 2019). The Associated Press (AP) also reports a database containing "real-time data on more than 2.5 million people in western China [the Xinjiang region]," including their names, birthdates and place of employment, as well as "notes" on their most recently visited places, such as mosques, hotels or restaurants (AP 19 Feb. 2019). The same source notes that the database is "updated constantly with GPS coordinates" of people's whereabouts (AP 19 Feb. 2019).

A 2019 report by Human Rights Watch (HRW) indicates that in the Xinjiang region, China uses Integrated Joint Operations Platform (IJOP),

[a] policing program [that] aggregates data about people and flags to officials those it deems potentially threatening [such as ex-prisoners, individuals returning from abroad or who do "not socialize with neighbors, seldom [use the] front door, and ac[t] suspiciously" (HRW May 2019, 26)]; some of those targeted are detained and sent to political education camps and other facilities. (HRW May 2019, 1)

According to HRW, the Chinese authorities collect various kinds of personal information, ranging from one's car color, to their height, or to their everyday behaviour that is considered suspicious by the authorities, that are then linked to people's national identification card number (HRW May 2019, 2).

2. Public Transportation

2.1 Airports

For information on exit and entry procedures at Chinese airports in relation to facial recognition and identity verification, including at the Shanghai Hongqiao Airport, see Response to Information Request CHN106355 of October 2019.

Sources report that there were approximately 235 or 238 civil airports in China as of 2019 (CNN 25 May 2019; Statista 2 July 2020). According to a news video by *SCMP* from September 2019, over 200 Chinese airports have adopted facial recognition for passenger check-in (*SCMP* 17 Sept. 2019). However, according to a press release by SITA, a company specializing in air transport IT and communications (SITA n.d.), 27 percent of Chinese airports have self-boarding gates that use biometrics (SITA 28 Nov. 2019).

According to the *SCMP* video, passengers can scan a Quick Response (QR) code through the WeChat mobile application, widely used in China, before completing an online form and then "going through the facial ID process" (*SCMP* 17 Sept. 2019). The same source notes that once their identity is confirmed, a boarding pass is issued (*SCMP* 17 Sept. 2019). In order to board using the facial recognition process, a "second-generation identity card" with an embedded digital chip is required and passengers need to register their card and fingerprints beforehand (*SCMP* 17 Sept. 2019). Corroborating information could not be found among the sources consulted by the Research Directorate within the time constraints of this Response. For further information on the second-generation Resident Identity Card (RIC), see CHN103755 of July 2011.

2.1.1 Beijing Daxing International Airport

According to the *SCMP*, the new Beijing Daxing airport uses facial recognition to support identity verification, as "[p]assengers can have their faces scanned to check in their luggage, clear security and board the aircraft," without having to show an ID, hold tickets or scan QR codes (*SCMP* 26 Sept. 2019). Similarly, Bloomberg, a company providing "business and financial data, news and insight" (Bloomberg n.d.), reports on its website that facial recognition technology is used everywhere in the airport, "[f]rom the ticket turnstiles at the train station, to getting through customs," and at the duty-free shops, associating the passengers' faces to their passports at check-in (Bloomberg 11 Dec. 2019). According to the same source, the technology was not fully operational in December 2019, and was used only by staff at the Daxing Express high-speed train's stations (Bloomberg 11 Dec. 2019). According to the China Global Television Network (CGTN), "the global service of state broadcaster China Central Television (CCTV)" (Freedom House Jan. 2020, 5), passengers arriving at the security checkpoints at the airports have to pass through a "two-door automated verification gate," and first scan their identity document in order for the system to retrieve information about their flight to cross-check it with their identity document (CGTN 28 July 2019). The second door is equipped with a camera that will take a picture and use facial recognition technology to verify

the information processed at the first gate (CGTN 28 July 2019). The same source indicates that travelers will undergo "personal security screening," which involves matching luggage with their owner through the use of cameras and item trays equipped with chips allowing for the prompt identification of the owners of "suspicious" items (CGTN 28 July 2019). The *SCMP* reports that smart robots equipped with facial recognition technology are used in the airport service rooms housing "electric switchboards, fire alarm control panels, circuit breakers and disconnects, and electricity metres" where they can identify intruders and immediately emit a warning (*SCMP* 26 Sept. 2019).

2.1.2 Guangzhou Baiyun Airport

According to sources, Guangzhou Baiyun Airport [in the southern province of Guangdong (Xinhua News Agency 1 Sept. 2020)] introduced a facial-recognition technology called "One ID" that creates an information database for each passenger and matches identity and travel information with facial features (Xinhua News Agency 1 Sept. 2020; *Global Times* 9 Aug. 2020). The system can automatically verify the passenger identity using their facial features during check-ins, luggage checks and security screenings (Xinhua News Agency 1 Sept. 2020; *Global Times* 9 Aug. 2020). According to the Xinhua News Agency, passengers can decline the use of their facial information at any time (Xinhua News Agency 1 Sept. 2020). The same sources indicate that the service will initially be used on domestic routes (Xinhua News Agency 1 Sept. 2020). *Global Times*, a newspaper published by the Communist Party's *People's Daily* (Reuters 15 Aug. 2019), specifies that the "One ID" service covers the "main procedures … at Terminal 1 of the airport" (*Global Times* 9 Aug. 2020). The same source also reports that "the new service … does not include" passengers who are under 12 years old, but they will still be required to present an ID card (*Global Times* 9 Aug. 2020).

2.1.3 Beijing Capital International Airport (BCIA)

In a press release by SITA, the BCIA has "completely automated" passenger processes through the use of SITA technology, "from check-in and bag drop through to immigration, security and finally boarding" (SITA 20 Aug. 2020). Passengers only need to register once during check-in and then continue through the process, enabled by facial recognition (SITA 20 Aug. 2020). Over "600 biometric checkpoints" were implemented throughout the airport, including "250 lanes of automatic gates, 80 kiosks, and 30 self-bag drop stations which will process passengers from international flights" (SITA 20 Aug. 2020). Corroborating information could not be found among the sources consulted by the Research Directorate within the time constraints of this Response.

2.1.4 Shenzhen Bao'an Airport

On its website, the Shenzen Bao'an Airport states that it uses a verification machine to determine through "big data analysis" whether the baggage of passengers needs to be checked (Shenzhen Bao'an Airport n.d.). According to the same source, upon arriving at the airport, the passenger must submit their identification document or passport to a machine at the first gate in the domestic security check (Shenzhen Bao'an Airport n.d.). Once the information is verified, the passenger receives permission to board and is informed whether their luggage needs to be opened or not (Shenzhen Bao'an Airport n.d.). The same source indicates that a second gate, designated as "Fast Track," is aimed at passengers with a "high safety rating" who can use this gate after being verified at the first gate, quickly passing through the fast track gate by way of facial recognition technology (Shenzhen Bao'an Airport n.d.).

Xinhua News Agency, a Chinese national news agency, reports that four "smart passages" enabling passengers to do self-service security checks started operating on 9 October 2019 in the "domestic departure area" (Xinhua News Agency 9 Oct. 2019). The source indicates that the equipment includes "self-service ID verification gates, facial recognition systems, luggage carousels, double-source X-ray machines, millimeter-wave human scanning devices and luggage recheck stations" (Xinhua News Agency 9 Oct. 2019).

2.2 Trains and Railway Stations

According to sources, the high-speed train network uses a facial recognition system (Telpo 5 Feb. 2019; Xinhua News Agency 18 June 2020). According to the Xinhua News Agency, an E-tickets system allows passengers to "pass ticket checks with their identity cards and facial recognition" (Xinhua News Agency 18 June 2020). While the system was limited to high-speed, inter-city trains, covering all of the network by 29 April 2020, it was set to expand to "normal-speed trains" as of 20 June 2020 (Xinhua News Agency 18 June 2020). *Global Times* indicates that during the travel rush of the 2019 Spring Festival, facial recognition was used to check tickets in "several cities" and that "the system also extends to third- and fourth-tier cities" (*Global Times* 20 Jan. 2019). The same source reports that the facial recognition system can be used to "track those who break the law via a blacklist, and monitor and alert authorities of any illegal activities and emergencies" (*Global Times* 20 Jan. 2019). The *Sydney Morning Herald*, an Australian newspaper, indicates that at Beijing's high-speed railway station, during the 2019 Spring Festival travel rush, tickets were verified through a facial-recognition system that also requires the national identity card (*The Sydney Morning Herald* 6 Feb. 2019). Without providing information on how information on their behavior is collected and recorded, the same source indicates that passengers are warned to respect the transport rules or else their personal social credit will be affected (*The Sydney Morning Herald* 6 Feb.

2019). The same source mentions, without providing further details, that in Guangzhou, artificial intelligence is used to analyze the video feed from security cameras in the train station (*The Sydney Morning Herald* 6 Feb. 2019).

2.3 Subways

Asia Times, a "pan-Asia digital news platform" with its three main newsrooms in Bangkok, Hong Kong, and New Delhi (Asia Times n.d.), reports that Beijing's subway operator plans to use facial recognition technology to classify passengers according to their criminal records in order to be then subjected to "different levels of checks and searches" (Asia Times 30 Oct. 2019). Similarly, Bloomberg indicates that, according to state media, facial recognition in the Beijing subway would be used to ease network congestion and that passengers would be subjected to different level of security checks according to "a credit system based on [their] behavior" (Bloomberg 25 Nov. 2019). *Global Times* reports that upon registering for the service, a passenger must consent to the application collecting personal data, such as the national card information, facial recognition information, payment, geographic location and personal credit score (*Global Times* 1 Dec. 2019). The same source adds that those who are "successfully verified and approved by [the] smart security app[lication] will receive a green pass" that allows them "to pass through a separate door with a facial recognition camera without the need to go through the security check" (*Global Times* 1 Dec. 2019). The same source provides the following details on the system's functioning: when using the new security door, passengers' faces are scanned and recognized by a camera connected to "a nationwide online profile database" that will be updated with the passengers' individual behavior history; the passengers who have committed infractions per the subway's regulations will be unable to use the service (*Global Times* 1 Dec. 2019). The same source indicates that, according to a staff member working at this station, the technology may "soon" be used on a larger scale (*Global Times* 1 Dec. 2019). However, Bloomberg notes that according to a representative from Beijing Ruubypay Science and Technology Co., the system promoter, the date of a citywide roll-out is unclear (Bloomberg 25 Nov. 2019).

Sources report that Zhengshou, in the northeast province of Henan, became the first Chinese city to deploy a large-scale facial recognition payment system for its public transportation network (*SCMP* 4 Dec. 2019; *The Standard* 3 Dec. 2019). The *SCMP* adds that, starting 10 December 2019, commuters can use the Zhengzhou subway through "an optional face scan" (*SCMP* 4 Dec. 2019).

According to the *Sydney Morning Herald*, in Guangzhou, subway users with a "'good travel record'" and having signed up for a new facial recognition system can use a special biometric gate and avoid waiting for "luggage checks" (*The Sydney Morning Herald* 6 Feb. 2019). Similarly, an October 2018 article by Radio Free Asia (RFA), a "private, nonprofit

corporation that broadcasts news and information to listeners in Asian countries where full, accurate, and timely news reports are unavailable" (RFA n.d.), reports that in several Guangzhou subway stations, facial recognition systems have been newly installed, requiring users to submit to a facial scan (RFA 29 Oct. 2018). The same source reports that, when they pass the gates, commuters will receive a QR code with their personal information and that passengers with a "higher social credit score" will be able to move through the process more quickly because their biometric data is linked to "big data about individual behavior and 'trustworthiness'" held by different Chinese authorities (RFA 29 Oct. 2018).

3. Public Space

The US Department of State's *Country Reports on Human Rights Practices for 2019* indicates that different forms of surveillance used "to monitor and intimidate political dissidents, religious leaders and adherents, Tibetans, and Uighurs" include facial recognition and "'gait recognition'" that enable police forces "to quickly identify individuals in crowds" (US 11 Mar. 2020, 23). *Foreign Policy* (*FP*) explains that Chinese authorities keep track of certain categories of people designated as "key individuals," ranging "from paroled criminals and users of drugs to foreigners, petitioners, and religious believers" (*FP* 21 Oct. 2019). The same source gives the example of the Dynamic Control System, one of the first of the databases used for the tracking, which contains more than 2 million registered drug users and "alerts public security offices whenever registered individuals use their national ID numbers to conduct computer-based transactions, such as buying a train ticket," then allowing the police to determine where the individuals are in order to intercept them, conduct a urine test for drugs and adding the results to their electronic files (*FP* 21 Oct. 2019). While the source indicates that the databases are diverse and focus on different population groups, it also notes that they "are being combined with broader state surveillance projects," as one firm claims that its software enables real-time data sharing with police from information systems of hotels, internet cafes, airports, and railway stations and others, and "[s]everal companies" state that their products "are integrated with facial-recognition cameras capable of identifying key individuals in public places" (*FP* 21 Oct. 2019). The *New York Times* reports that during a sale demonstration, a representative of a technology firm searched for one common name in the real-time records of about 1,200 hotels in the southern city of Xiamen, and was able to pull up the identity of three hotel guests and their personal details such as their hotels, room numbers, time of check-in, registered address, ethnicity and age (*The New York Times* 17 Dec. 2019). The same source describes a system installed at the gate of an apartment complex in Zhengzhou, "an industrial city in central China," that collected identification codes from mobile phone and recorded faces, matching 3,000 phones with faces in the span of four days (*The*

New York Times 17 Dec. 2019). The same source explains that in addition to this single system, part of a "citywide surveillance network," includes "license plates, phone numbers, faces and social media information" (*The New York Times* 17 Dec. 2019).

Reuters provides the example of a man from Hangzhou [the capital city of the eastern province of Zhejiang] who, upon returning from a business trip during the COVID-19 pandemic, was contacted by the police who had tracked his car by his license plate and who requested him to isolate for two weeks (Reuters 7 Feb. 2020). When he went out two days sooner than he was allowed, Reuters reports that he was spotted by a camera with facial recognition technology and was subsequently called by the police and by his employer, whom the authorities contacted as a warning (Reuters 7 Feb. 2020).

Sources report that in the Xinjiang region where Uyghur minorities live, the Chinese government has developed a mass surveillance system that generates biometrics and personal data on all residents of the region (HRW May 2019, 13-15; AP 19 Feb. 2019; *The New York Times* 16 Apr. 2019). HRW reports the case of a young woman, who was born in Xinjiang, but grew up in a Western country, who, while visiting family in Xinjiang, was arrested and subsequently detained in a "political education" camp after authorities detected her use of a VPN to log into her school's website to sign up for classes (HRW 6 Apr. 2020). The same source reports that a few months after her release from the camp, the young woman decided to go on an outing and came to a security checkpoint, and when she swiped her identity card, the machine made a sound to alert police, who then came to verify her identity (HRW 6 Apr. 2020). In its 2019 report, regarding the application of the IJOP system, HRW explains that, at some checkpoints in Xinjiang, the equipment not only identifies people through their identity cards and their facial features, but it is also "vacuuming" data from their electronical devices, "detecting and collecting MAC [Media Access Control] addresses and IMEI [International Mobile Equipment Identity] numbers of the person's phones, and logging such data for identification and tracking purposes" (HRW May 2019, 43).

4. COVID-19 Pandemic and Facial Recognition

Sources report that Chinese authorities use facial recognition technology coupled with thermal infrared monitoring equipment in their efforts to contain the coronavirus responsible for the COVID-19 pandemic by identifying and tracking potentially sick individuals in public transportation and public spaces, such as subway stations, schools and community centres (*The Globe and Mail* 11 Mar. 2020; BBC 3 Mar. 2020; ANI 29 Mar. 2020). The *Globe and Mail* reports that in the Haidian District of Beijing, infrared cameras with a "human shape detection" feature were used to monitor the home entrances of quarantined people and to trigger an alarm if "abnormal sounds" were detected (*The Globe and Mail* 11 Mar. 2020).

Sources also report that Chinese authorities have developed a system of QR codes indicating whether an individual is at risk of being infected with COVID-19 (*The New York Times* 1 Mar. 2020; *Wired* 17 July 2020). According to sources, two of China's technology giants, Alibaba, with its mobile payment application Alipay, and Tencent, through its messaging application WeChat, have developed two applications that host the QR codes (CNN 16 Apr. 2020; *The New York Times* 1 Mar. 2020). Sources explain that the smartphone applications rely on personal information, such as travel and medical history, to generate a QR code that can be either green (user can move unrestricted), yellow (user must self-isolate for seven days), or red (user must self-isolate for fourteen days) (*The New York Times* 1 Mar. 2020; *Wired* 17 July 2020). Sources indicate that, in order to generate the QR codes, different local authorities use different databases (CNN 16 Apr. 2020) or mini applications (*Wired* 17 July 2020). According to CNN, as criteria regulating the color assignation may vary among different areas and as databases are not shared by the different local governments, some authorities "have been reluctant to recognize health codes from other places" (CNN 16 Apr. 2020). The *New York Times* reports having examined the software code and having found that "it appears to share information with police" by "send[ing] the person's location, city name and an identifying code number to a server" (*The New York Times* 1 Mar. 2020). Corroborating information could not be found among the sources consulted by the Research Directorate within the time constraints of this Response.

This Response was prepared after researching publicly accessible information currently available to the Research Directorate within time constraints. This Response is not, and does not purport to be, conclusive as to the merit of any particular claim for refugee protection. Please find below the list of sources consulted in researching this Information Request.

Note

[1] The US-China Economic and Security Review Commission was created by US Congress "to monitor, investigate, and submit to Congress an annual report on the national security implications of the bilateral trade and economic relationship" between the US and China (US n.d.).

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Date modified:

2020-06-01