

Hong Kong Diploma of Secondary Education

Liberal Studies

Structured Enquiry Approach

Independent Enquiry Study Report

Standard Covering Page (for written reports and short written texts of non-written reports)

Enquiry Question: Should facial recognition technology be implemented into public surveillance systems in HK?

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Class/ Group: S5F

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Notes:

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Table of Contents

(A) Problem Definition	3
Introduction and objectives.....	3
Scope.....	3
Significance and points of interest of enquiry	3
Focus questions.....	5
(B) Relevant Concepts and Knowledge/ Facts/ Data	6
Nature of facial recognition technology	6
Concepts.....	6
(C) In-depth Explanation of the Issue.....	8
Positive impacts of the implementation of facial recognition	8
Negative impacts of the implementation of facial recognition.....	10
Factors regarding its ethicality.....	12
(D) Judgement and Justification.....	14
Justification on ethicality	14
Judgement	17
Current obstacles & Suggestions	17
Conclusion	18

(A) Problem Definition

Introduction and objectives

The development of new technology is ultimately what drives the progression and advancement of human society. As a trend of recent years, we can see that more and more emphasis has been put on the research and development of the informational technology field. Among which, the most prominent example and the most rapidly growing industry is that of artificial intelligence¹. Artificial intelligence (*hereby abbreviated as AI*) is believed to be able to allow quicker and more adaptive systems be implemented into trivial everyday devices with little extra cost, which is also the reason that AI is now the main focus of numerous large technology companies^{2,3}. However, despite its numerous benefits, there exist controversy regarding the ethicality of such technology, most noticeably upon the facial recognition (*hereby abbreviated as FR*) branch of AI. It would be the main objective of this study to investigate the reasons behind this controversy and justify the appropriacy of its implementation. Please also note that the result of this study can also apply to most branches of the recognition technology family. FR is used here specifically due to its extra implications and its role as a basis of most other derivative systems.

Scope

The scope of the study will be mostly regarding the implementation in HK because it is among one of the few regions that currently have the full capability and the infrastructure available for the implementation of such a system. Moreover, there are affairs and other factors that can act as prime examples of the controversy and points of study. However, since the system is not yet currently implemented, some data may be pulled from sources outside of HK.

Significance and points of interest of enquiry

Necessity

As we can see, AI, and by transitivity, FR, is a relatively young branch of technology. As its progression, more and more ethical concerns and other points of controversy arises. It is inevitable that we will reach the point where AI is omnipresent, controlling every bit of our

¹ 5+ Fastest Growing Industries | Best To Start A Business 2020

<https://agiletech.vn/fastest-growing-industries-2020/>

² Google shows real focus on AI even as it unveils new hardware 5-10-2016

<https://www.ft.com/content/4d5bbb6a-8aaf-11e6-8cb7-e7ada1d123b1>

³ Microsoft's 'inclusive design' will increase its focus on accessibility in 2020 13-1-2020

<https://www.windowscentral.com/how-microsoft-accessibility-efforts-are-mainstreaming-inclusive-design-efforts-2019>

lives. Therefore, it is important and necessary to discuss and reach a consensus about its ethics and usages before it is further developed and become more widespread and further developed and transposed.

Current limitations of the technology

The most notable use of FR is the real-time tracking of citizens, and ultimately enhancing the security of the city^{4,5}. However, there are major limitations and inaccuracies⁶ that may lead to misidentification and injustice. This would be one of the major points of interest of enquiry.

Points of concern

The coverage and the efficiency of the FR system raises concerns about the breach of privacy⁷, which is another major deterrent for the general public against its implementation. This will be another point of study.

Political influence

There occur recent political affairs that has created conflicting opinions and concerns about the potential possibility of the misuse of the information gathered by FR. This will be another major point of study.

Points of conflict

Nowadays, people are generally more concerned about their privacy and security than ever before. The implementation of FR systems, however, are viewed as to be posing detrimental effects on these regards. FR can extract a lot of data from very little information, and this has raised serious concerns among the public. Many fear that it may be used as a tool for the government to control its people. However, some say that security is more important than privacy. Though despite the intense debate, the Chinese government is continuing the development and implementation of the technology. It has introduced such technology in many public transit stations⁸ with hopes of expanding it to all roadside surveillance. This issue involves conflicts between privacy, security, and ethicality. And with the recent political affairs

⁴ What is facial recognition - and how do police use it? 24-1-2020

<https://www.theguardian.com/technology/2020/jan/24/what-is-facial-recognition-and-how-do-police-use-it>

⁵ 人臉識別與隱私：中港台激烈討論的爭議話題 7-11-2019

<https://www.bbc.com/zhongwen/trad/chinese-news-50328377>

⁶ Facial recognition software is biased towards white men, researcher finds 11-2-2018

<https://www.theverge.com/2018/2/11/17001218/facial-recognition-software-accuracy-technology-mit-white-men-black-women-error>

⁷ 人脸识别争议：“钱景”灿烂，前景暗淡？ 17-7-2019

http://www.xinhuanet.com/tech/2019-07/17/c_1124762069.htm

⁸ 北京地鐵將運用人臉識別技術對乘客進行分類安檢，你如何看？ 5-11-2019

<https://theinitium.com/roundtable/20191105-roundtable-zh-facial-recognition/>

in HK, many HK citizens fear that it can allow the Chinese Central government to exert political power through the system^{5,7}.

Regulation

Currently, there is still no clear or well-defined law or regulation regarding the technology⁹. Despite the backlash, facial recognition technology has been becoming more and more widespread. As shown in the experimental implementation in a public residence of Hong Kong, a mixed opinion was received¹⁰. This will inevitably raise even more questions in the future. Therefore, it is an issue worth investigating.

Focus questions

1. What are the impacts of the integration of FR into public surveillance systems?
2. Is it feasible to integrate FR into public surveillance systems?
3. What are the citizens' major concerns and conflicts regarding this policy?
4. Should FR be implemented into public surveillance systems in HK?

(767 words)

⁹ As facial recognition tech races ahead of regulation, Chinese residents grow nervous about data privacy 27-11-2019
<https://www.scmp.com/tech/policy/article/3039383/facial-recognition-tech-races-ahead-regulation-chinese-residents-grow>

¹⁰ 第一城人臉辨識技術惹爭議 開放透明最重要 16-8-2019
<https://www.hk01.com/01%E8%A7%80%E9%BB%9E/364488/%E7%AC%AC%E4%B8%80%E5%9F%8E%E4%BA%BA%E8%87%89%E8%BE%A8%E8%AD%98%E6%8A%80%E8%A1%93%E6%83%B9%E7%88%AD%E8%AD%B0-%E9%96%8B%E6%94%BE%E9%80%8F%E6%98%8E%E6%9C%80%E9%87%8D%E8%A6%81>

(B) Relevant Concepts and Knowledge/ Facts/ Data

Nature of facial recognition technology

Before we go into a deep investigation on this issue, it is important to first define a few key characteristics and nature of FR.

- Passive data collection, (i.e. be able to collect data on idle)
- Easily variable, (i.e. highly dependent on external environmental factors)
- Dependent on source material¹¹, (i.e. training data of the AI)
- Swift analysis process
- Real-time tracking capability (with the aid of a vast network)

Concepts

1. Facial recognition technology¹²

Recognition technology incorporates artificial intelligence or algorithms to identify objects in a video footage. Facial recognition is a sub-category of this technology capable to identify human faces given the database of the citizen. It can be used to track citizens in real-time when incorporated in a public surveillance system. It is also important to note that FR can act as the basis for other, more sophisticated analysis technology¹³, such as action analysis, intent analysis.

2. Mass surveillance

It can act as a way for the government to monitor, track, and record the activities of its citizens. It can pave way to an enhanced social security, but it also allows some other shady activities such as spying. This may take away the privacy of the citizens and puts more control into the government's hands. It is a quickly developing and expanding system with more and more technology companies taking part in.

3. Ethics

Ethics in AI can mean the appropriacy of how the AI handles personal information of its users. In this case, it means how the FR uses its database and identify the person in the picture or how its creators/admins use or misuse the data. In a courthouse scenario, it can mean how FR may

¹¹ Facial Recognition Technology; A Survey of Policy and Implementation Issues
<https://eprints.lancs.ac.uk/id/eprint/49012/1/Document.pdf>

¹² Facial Recognition Technology
https://en.wikipedia.org/wiki/Facial_recognition_system

¹³ 監控升級：人臉識別系統能讀出情緒和威脅性 17-7-2018
<https://www.bbc.com/zhongwen/trad/world-44859007>

influence the judgement of the jury or the judge and affect the expression of justice by acting as a source of evidence, with the possibility of misidentification. In a public surveillance context, this can mean the consent¹⁴ of the subject who is being recorded and identified.

4. Political environment of Hong Kong

Due to its nature, FR allows a higher degree of control of the government over its citizens. With the tense political atmosphere of HK regarding the degree of executive power the Chinese Central government exerts, that is, some thinking that the Central government may be using unconventional means to asserts dominance over the non-patriots, scepticism about the potential uses of FR and public surveillance rises.

(409 words)

¹⁴ What Are Important Ethical Implications of Using Facial Recognition Technology in Health Care? 2-2019
<https://journalofethics.ama-assn.org/article/what-are-important-ethical-implications-using-facial-recognition-technology-health-care/2019-02>

(C) In-depth Explanation of the Issue

Positive impacts of the implementation of facial recognition

Security

There exist a lot of cases where wanted criminals are lost by the police and managed to successfully escape under the cover of the crowd. Trivially, it is impossible for the police force to monitor the huge traffic of public transit users. FR systems, when integrating into surveillance systems in public areas where a large amount of traffic is observed, can aid with the task of criminal identification.

¹⁵In some major train stations in Taiwan, FR are integrated into the surveillance system. The police force reported that there have been multiple wanted criminals detected by the system and got subsequently arrested.

¹⁶It is also reportedly been used by the US police force to provide the location of an escapee by using the surveillance data to pinpoint the route of a wanted personnel. Drones with FR capability are also being deployed by the *New York Police Department* as a test trial with aims of using police vehicles as data centres and to potentially automate police patrol work.

¹⁷It is also said that FR can be used in customs contexts as a border control method. By separating travellers based on their facial expressions, actions, past criminal records, etc., effort can be concentrated towards groups that are under drug influence, suspicious and potentially dangerous where extra vigorous checks can be imposed. This policy can also potentially increase the processing rate of the borders and cut down on the most intensive labour cost¹⁸.

¹⁹From a police report, in HK, around 4,800 people are report missing every year on average. However, from 2011 to 2015, only 88% are reported to be successfully solved. That is, around 580 people remain unfound every year. Despite HK being a small place, the unsolved percentage is unbelievably high. Despite this, it is already rated to be one of the safest places

¹⁵ 人臉識別與隱私：中港台激烈討論的爭議話題 7-11-2019

<https://www.bbc.com/zhongwen/trad/chinese-news-50328377>

¹⁶ THE MICROSOFT POLICE STATE: MASS SURVEILLANCE, FACIAL RECOGNITION, AND THE AZURE CLOUD 15-7-2020

<https://theintercept.com/2020/07/14/microsoft-police-state-mass-surveillance-facial-recognition/>

¹⁷ Face scanners are coming to PHL Airport next week 14-1-2020

<https://billypenn.com/2020/01/14/face-scanners-are-coming-to-phl-airport-next-week/>

¹⁸ 北京地鐵將運用人臉識別技術對乘客進行分類安檢，你如何看？ 5-11-2019

<https://theinitium.com/roundtable/20191105-roundtable-zh-facial-recognition/>

¹⁹ Hong Kong's missing persons: thousands of people vanish every year but the police don't keep official records 24-1-2016

<https://www.scmp.com/news/hong-kong/law-crime/article/1904334/hong-kongs-missing-persons-thousands-people-vanish-every>

in the world, meaning the rates of most other countries are considerably lower. With the problem of ageing population, missing person cases are expected to grow higher.²⁰In a few Indian airports, FR are reportedly responsible for the identification of over 3,000 children in just days. From this, we can see the effectiveness and efficiency of the system and its potential when integrated in a city-wide scale.

Public Health

FR has seen uses in the form of “*health mirrors*”^{21,22}, devices that has an embedded camera in a mirror which allows the user to check their health conditions with the aid of a computer analysis. Some hospitals that have integrated this system reported that it allows the hospital to more accurately track the health statuses of in-patients or out-patients to allow better manpower allocation by sorting patients based on severity and diverging the flow to different departments. Doctors need not be always present for the patient to check every minor detail. Mundane tasks, such as heart rate and breathing rate tracking, emotion monitoring, etc., can be done quickly with the added bonus of a non-contact analysis²³, which is said to be beneficial for some contagious cases. Moreover, it also allows a more accurate analysis of certain skin conditions²⁴, most of which are normally very hard to diagnose and are very prone to human error.

In case of a pandemic, experts said that FR would be very helpful in terms of the tracking of potential patients and the backtracking of patient zero²¹. It can allow more precise real-time information about the general spread of the disease by tracking those with the symptoms and allow more effective resource allocation and more localised measures and policies, increasing the overall effectiveness of public disease control.

Governmental administration

As of currently, most of the new policies can only have their effectiveness judged after a long period after the initial implementation based on some statistics which are mostly not very useful and cannot tell the full picture. With FR, the government can easily utilise the data collected from this system to assess the effectiveness of their policies by comparing the behaviours of

²⁰ Mass surveillance fears as India readies facial recognition system 7-11-2019
<https://www.reuters.com/article/us-india-tech-facialrecognition-trfn-idUSKBN1XH0S9>

²¹ Ming-Zher Poh: a mirror that gives you an instant health check 22-1-2012
<https://www.theguardian.com/technology/2012/jan/22/medical-mirror-ming-zher-poh>

²² Facial Recognition for Healthcare Disruption. Key Use Cases 2-7-2020
https://indatalabs.com/blog/ai-face-recognition-in-healthcare?cli_action=1595084479.862

²³ How Facial Recognition is used in Healthcare 23-3-2019
<https://sightcorp.com/blog/how-facial-recognition-is-used-in-healthcare/>

²⁴ Facial Recognition for Healthcare Disruption. Key Use Cases 2-7-2020
https://indatalabs.com/blog/ai-face-recognition-in-healthcare?cli_action=1595084479.862

citizens before and after a policy is implemented. This can act as a quick and unbiased way of assessment compared to relying on public consultation and feedback where the opinions may only come from a small group of citizens. This method of data collection also allows some previously infeasible data, such as minor day-to-day activities, travel patterns, etc., to be recorded and analysed.

For example, some new transportation policies can be monitored by tracking the habit of the drivers, allowing more intricate variables to be known to the policy-making process. China has implemented this technology on several major highways and are able to charge drivers automatically regarding dangerous behaviours such as talking on the phone, not wearing seatbelts, etc.. Changes of some road laws can be observed via this system.

Negative impacts of the implementation of facial recognition

Social

From the data collected by the FR system, a lot of sensitive information can be extracted, such as race, ethnicity, some religions, genders, age, etc. This is said to allow the administrators to potentially employ discriminatory acts with an automated system.

²⁵For example, the US has always been on bad term with Mexico with the US president, Donald Trump, has been proposing to introduce FR-based surveillance systems along the Mexican-American border to track illegal immigrants and allow a swift arrest. This act has been criticised to be discriminatory against Mexicans.

Similarly, FR may allow some biased pre-judgement in police forces, where certain minority groups may be given a harsher algorithmic test and are more likely to fail.

In addition, since these systems are designed based on the region's ethnic majority, the training data used to dictate the system may have a significantly higher inaccuracy rate when identifying those who are ethnically minor in the population. In a US-based system, researchers have found that it is 20% more likely to misidentify a dark-skinned person than a light-skinned person²⁶. This can potentially give rise to a society where the system itself may be racist, and potentially

²⁵ US government to use facial recognition technology at Mexico border crossing 5-6-2018
<https://www.theguardian.com/technology/2018/jun/05/facial-recognition-us-mexico-border-crossing>

²⁶ Facial recognition software is biased towards white men, researcher finds 11-2-2018
<https://www.theverge.com/2018/2/11/17001218/facial-recognition-software-accuracy-technology-mit-white-men-black-women-error>

harm social harmony and promote social stratification.

Privacy

Due to the nature of the system, it is impossible to ask everyone for consent before conducting surveillance and analysis on them. With the ease of tracking and monitoring, anyone's daily routines, whereabouts and habits can easily be recorded and logged. This raises a huge privacy concern where one's actions are always exposed and that some extensive and comprehensive data about any given person can be easily extracted without their consent. On top of that, in case the database encounters a security breach and the data gets leaked, or if their data is misused, this can be very disastrous to the public.

As of currently, there is no regulation on sensitive biometric data such as facial features in most of the world²⁷, companies with access to the data can legally sell these information to other companies like other not-as-sensitive information, allowing them to use the data to tailor advertisements and promotions to potential customers not only digitally but follow them physically to try to sell them products. In some extreme cases, this can allow other more sinister intents such as dark web hitman services, human trafficking, kidnapping, stalking, etc., posing huge danger onto the subject-in-question.

Political freedom

Since the recent non-patriotic protests in HK, many started fearing that FR can be used to identify each and every person who are involved in those political activities, and that the Central Chinese government could use this information to arrest and control the public, harming the rights and freedom of Hong Kong citizens. As the political tension intensifies, this has become more and more of a concern to politically active personnel. They fear that the Central government may be able to utilise this information to accuse and arrest them.

In the mainland China, FR is already used as a complement of the “*Social Credit System*”²⁸, an automatic system that assigns a credit score to each and every citizen based on their past records, recent activities, etc., with aims of banning them from certain locations/ facilities/ public transits and segregating potentially dangerous person before they even commit an unlawful act.

²⁷ As facial recognition tech races ahead of regulation, Chinese residents grow nervous about data privacy 27-11-2019
<https://www.scmp.com/tech/policy/article/3039383/facial-recognition-tech-races-ahead-regulation-chinese-residents-grow>
²⁸ 人臉識別與隱私：中港台激烈討論的爭議話題 7-11-2019
<https://www.bbc.com/zhongwen/trad/chinese-news-50328377>

Politically active members fear that some protests may be labelled as non-patriotic or dangerous and be logged on a name list. This can potentially harm the political freedom of individuals by discouraging their participation in favour of their own personal safety and future prospects.

Factors regarding its ethicality

When talking about FR, its use cases and effectiveness is undoubted, but by far the most predominant conflict arises from its ethicality against the subjects.

Fairness

The question of whether it is fair can be concluded into a few questions.

- Is the system unbiased against all parties?
- Is the system accurate enough to be used as evidence?
- Can the system be maliciously modified?
- Are the regulations sufficient to combat unfairness?

Privacy

The question of whether it can preserve and protect the subjects' privacy can be concluded into a few questions²⁹.

- Are the subjects aware of the system?
- Have the subjects expressed their consent?
- Are the subjects aware of the purpose of the collected data?
- Do the system collect more data than it needs to aid its function?
- Is their data protected from external parties?

Autonomy

The question of whether it affects the subjects' autonomy can be concluded into a few questions.

- Does the system burden the subjects in any way, intentionally or unintentionally? (Most notably psychologically)
- Does the system exert influence over the (lawful) actions of the subjects purely due to its existence?
- Does it restrict some (lawful) parties more than it should?

²⁹ Facial Recognition Technology: A Survey of Policy and Implementation Issues
<https://eprints.lancs.ac.uk/id/eprint/49012/1/Document.pdf>

Morality

Morality is the most convoluted aspect of any topic, mainly because no one has a standard definition for how something can be considered moral; and frankly, it is infeasible to conclude morality down into a few factual questions. The scope of this aspect in this study should be rather narrow, regarding only a few aspects of morality. This will be justified in (D).

(1673 words)

(D) Judgement and Justification

Justification on ethicality

From the aspects defined in (C), let us evaluate the degree of ethicality.

Fairness

As a part of the mass surveillance system, FR analysis will be inevitably used as evidence in the courthouse. Although this is only one of the use cases, it serves as a concrete reason behind the importance of its fairness.

AI is unpredictable. Given the same person, a slight change of angle, lighting, colour, etc., may result in a completely different analysis result. A study had shown that the confidence can drop to as low as 5% in some conditions whereas otherwise, it can attain 95% confidence on average³⁰. Therefore, it is important to note that the reliability is dependent on its environment.

As discussed before in (C), the unbiased accuracy (i.e. pure performance of the system) is heavily based on the training data the AI is exposed to. Even under optimal conditions, the accuracy when identifying ethnic minorities of its service region.

However, other than the local ethnicity, the skin tone itself can be a factor in its accuracy. The algorithm works best when the facial features of a person is pronounced. On top of that, most cameras struggle to capture darker colours distinctly. There had been a case where a dark-skinned person was identified as a gorilla³¹. A study had shown that, even in a system specifically trained to recognise darker-skinned people, the accuracy is still only under 80%³². If the system is not confident of a person, they are more likely to be flagged as fraudulent or a potential threat, leading to possible unintentional “racist” scenarios.

As of currently, no such regulation against these kinds of “unfairness” exist yet because the technology itself is flawed. But if the system is intentionally designed to segregate, the *Equal Opportunity Ordinance* of HK does apply. However, there still exist technical difficulties to prove someone guilty under the circumstances.

³⁰ Quantifying How Lighting and Focus Affect Face Recognition Performance
https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=905048

³¹ Facial recognition software is biased towards white men, researcher finds 11-2-2018
<https://www.theverge.com/2018/2/11/17001218/facial-recognition-software-accuracy-technology-mit-white-men-black-women-error>

³² Facial recognition AIs have a hard time with dark skin 26-3-2018
<https://kottke.org/18/03/facial-recognition-ais-have-a-hard-time-with-dark-skin>

Privacy

As a part of a big publicly exercised policy, it is feasible to assume that the public is aware of the system. So, we may disregard this part of the concern.

It is impossible to ask for consent for every person to be surveilled. Even if it is attempted, there is no feasible way to prevent surveillance on particular people. Not to mention that this would defeat to purpose of a security surveillance system. Regardless, it is not necessary to ask for consent before a public surveillance is conducted by an authority under HK law³³. Private constitutions are also only required to inform the subjects about the surveillance. Furthermore, there is no right for citizens to deny the consent if it is regarding public security in most FR-integrated countries^{34,35}.

Under the *Personal Data (Privacy) Ordinance* of HK³⁶, parties, private or public, enforcing means of personal data collection are lawfully required to fully disclose the potential uses the subjects' data may be put to. It is also stated that it is prohibited to store personal data of individuals than lawfully required, or functionally necessary; however, there is no clear definition of what is regarded as functionally required. Also, it is to be noted that there is not yet addendum or additional regulation regarding particularly sensitive data such as biometric data.

Despite all the terms and regulations, it is to note that there is still a risk of a database security breach that can compromise privacy.

Autonomy

Since an AI-based system is statistically analytic, its decisions are very much influenced by past cases, meaning it is not 100% unbiased. In a test installation in an airport at California, it is claimed that the system had generated one false positive case for every 750 passengers scanned³⁷. If the enforcers do not take action for each alert, then the system would be void of purpose. But if they do take action for every alert, this would terrorise many innocent travellers,

³³ Surveillance, Basic Law Article 30, and the Right to Privacy in Hong Kong 10-2005
<https://www.legco.gov.hk/yr05-06/english/panels/se/papers/secb2-259-1e.pdf>

³⁴ FACIAL RECOGNITION TECHNOLOGY Commercial Uses, Privacy Issues, and Applicable Federal Law 7-2015
<https://www.gao.gov/assets/680/671764.pdf>

³⁵ Facial Recognition and Privacy 6-12-2011

<https://cdt.org/insights/facial-recognition-and-privacy/>

³⁶ Data Privacy Law; Personal Data (Privacy) Ordinance

https://www.pcpd.org.hk/english/data_privacy_law/ordinance_at_a_Glance/ordinance.html

³⁷ Future Tech 1-9-2002

<https://www.discovermagazine.com/technology/future-tech-26>

causing panic and major delay of their on-going business. We can see that this system may put unnecessary burden onto citizens just because of some errors.

Some have also theorised that the mass surveillance systems are a way for the government to control and monitor closely its citizens. Proceeding India's installation of FR systems, a mostly negative feedback has been reached among its citizens. "It is very worrying that technology is being used as an instrument of power by the state rather than as an instrument to empower citizens." said *Apar Gupta*, executive director of a local non-profit Internet Freedom Foundation³⁸. Some has also described themselves to be in a state of unease with the feeling of constantly being watched. However, despite their discontent, there has been little to no method the citizens can express their thoughts through.

In HK, 2019, the government has introduced Smart Lampposts. Although it has already been clarified that they are only used to monitor traffic, road usage, and weather data³⁹, rumours have been spreading about the government using the cameras as a means of tracking HK citizens in case of large public events and paving way towards an extensive mass surveillance. The HK police force has been reported to have already access of a Sydney-based FR system, *iOmniscient*⁴⁰. This has quickly led to worries about HK adopting a mainland China-style of mass surveillance. Many has expressed worry about this system potentially harming the express of freedom by demonstration and protests, especially on some politically sensitive topics, such as the recent protests on the "Refugee Law". Some other threat theories also exist, revolving around the idea of China exerting remote political power through different unconventional means. Even though the surveillance system has always been present, the integration of FR has been known to discourage some from participating in protest activities. Some international organisations, such as *Amnesty International*, are the prime activists proposing against FR stating that it can violate some rights in this regard⁴¹.

Morality

Morality is an exceptionally intangible topic. Hereby shall I enumerate only one point.

³⁸ Mass surveillance fears as India readies facial recognition system 7-11-2019
<https://www.reuters.com/article/us-india-tech-facialrecognition-trfn-idUSKBN1XH0S9>

³⁹ Smart lamppost functions explained 16-7-2019
https://www.news.gov.hk/eng/2019/07/20190716/20190716_161609_629.html

⁴⁰ Hong Kong Police Already Have AI Tech That Can Recognize Faces 23-10-2019
<https://www.bloomberg.com/news/articles/2019-10-22/hong-kong-police-already-have-ai-tech-that-can-recognize-faces>

⁴¹ Amnesty pushes for ban on facial recognition use for mass surveillance by police, government 16-6-2020
<https://www.biometricupdate.com/202006/amnesty-pushes-for-ban-on-facial-recognition-use-for-mass-surveillance-by-police-government>

Some criticised that the FR system has violated the modern legislative principle “*Presumption of Innocence*”, where suspects are considered innocent unless otherwise proven, by assigning everyone a threat level score and comparing them to a criminal database.

Judgement

Basing on the above justification, we can see that there are still a lot of flaws regarding this technology itself, risks it may bring, ethicality issues. Despite its various uses in medicine, public health, security, etc., I believe that FR system should not be implemented into HK public surveillance systems based on the following criteria.

Necessity

Other than some uses such as missing person location, there seem to be little actual necessity and urgency overall. Other than speed, there seem to be no significant advantage of FR over the tradition methods in terms of effectiveness.

Drawbacks

The implementation process, uncertainty, and risk factors of FR is not suitable for public uses in a large scale like this. As seen in multiple other regions⁴², most notably some US states and the EU, has banned the implementation of FR into public surveillance based on its drawbacks, mainly on privacy and data protection basis.

Current obstacles & Suggestions

From the above, we can isolate 3 root obstacles FR is currently facing.

1. The highly irregular accuracy
2. The lack of regulation on sensitive biometric data in the world
3. The distrust and mismatch of expectations between the citizens and the government

Hereby shall I raise some suggestions regarding each of these issues in hopes of paving way for the implementation of FR.

1. Nothing

Unfortunately, there is currently not much we can do against the first obstacle other than to wait

⁴² San Francisco was right to ban facial recognition. Surveillance is a real danger 30-5-2019
<https://www.theguardian.com/commentisfree/2019/may/30/san-francisco-ban-facial-recognition-surveillance>

for its maturity.

2. Set up strict regulations regarding biometric data

Currently, biometric data are under the same regulation as other general personal data. However, we have to realise that biometric data is potentially a lot more dangerous if misused because they are directly tied to the person themselves. Before stricter regulations are set up, with more thorough consideration processes, FR should not be implemented.

3. Open channels to facilitate the communication between citizens and the authorities

From the above cases and in HK, we can see that the majority of the opposition comes from the mismatch of expectations between the two parties. The major worry is that the government can control the citizens in a deeper regard. Without the clarification and reassurance of the purposes, and the response to the citizens' worries, implementing FR will only trigger social discontent and stratification.

Conclusion

Facial recognition technology is still at its infancy with not only a lot of potential, but also a lot of concerns. Despite its usefulness, before all the concerns are carefully patched up, facial recognition technology should not be implemented into public surveillance systems in HK.

(1466 words)

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