EC601 Project4: Social impact on Machine learning policing

Tianshi Zhang U55243669

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1 Abstract

Nowadays, artificial intelligence is becoming more and more important in society. There are several apps in China that can help you search for restaurants you might like based on your preferences, history, and keywords. If you are traveling, there are several apps like *Uber* that can help you reach your destination. Not only that, in the judicial system, machine learning is also a powerful helper. I also read related articles in the BU library and got some inspiration. Predictive policing has become a new panacea for crime prevention. However, we still know too little about the performance of computational methods in the context of predictive policing.

Keywords
machine learning, predictive policing, social physics, social impact

2 Introduction

In the paper, based on my reading materials, I will think about and explain this topic from three aspects, machine learning on predictive policing, analysing of serious misconduct and predicting the costs of criminal justice policy interventions.

The first one is predicting policing. The second one is using machine learning to analyze what behaviours are misconduct and how to grade these behaviors. The third one is applying machine learning to calculate the cost of criminal justice policy interventions.

2.1 Predictive Policing

In fact, predicting the police is the one with higher difficulty, the lowest risk, the highest return, but the least negative social impact. Predictive policing has become a new panacea for crime prevention. More and more law enforcement agencies take their decisions based on algorithmic crime forecasts, often in response to budget cuts and a growing pressure to increase both the efficiency and the objectivity of criminal justice. Broadly speaking, predictive policing makes use of information technology, data and analytical techniques in order to identify likely places and times of future crimes or individuals at high risk of becoming a future (re)offender or victim. Broadly speaking, predictive policing makes use of information technology, data and analytical techniques in order to identify likely places and times of future crimes or individuals at high risk of becoming a future (re)offender or victim. Meanwhile, there is a great variety of software solutions to perform these tasks, ranging from departments' in-house developments to commercial off-the-shelf products.

In China, the application of predictive policing has become more and more widespread. Because my father works in the Police Department of Beijing, I have a little bit of my own understanding of China's predictive police system. I can also express some of my views on the impact of the predictive police system on society. Because the Chinese government assigns an 18-digit ID number to every citizen when they are born, and this ID number cannot be changed. You can also get an ID card when you reach the age of 18. Therefore, the police system can easily register, identify and track those with criminal records. Therefore, most of China's predictive police system operates based on ID cards.

For example, it is well known that China has extremely low tolerance for drug dealers. Carrying more than 50 grams of drugs will be sentenced to death.Therefore, the police system puts special labels on certain addicts. When they have unusual behaviors, they can directly notify nearby police officers on patrol or on duty to investigate.

Another example is that this has only been implemented in China in the last five years. Because some people have disrupted public order, such as obstructing the departure of trains, fighting on planes, taking dangerous goods on public transportation, and so on. Therefore, the police system will restrict these people from taking public transportation. Some people can only buy full-price tickets, some cannot buy fast transportation such as airplanes and high-speed rail, and some are directly prohibited from riding. To sum up, these people have committed crimes or violated social security. The predictive system will give early warnings to some of their behaviors in order to prevent them from committing evil again and punish them.

But the predictive policing system currently used by the Chinese police mainly targets former or known criminals. It may not be effective for criminals who have committed a crime for the first time or have not been recorded. But it doesn't matter. In recent years, the police system has cooperated with a large number of private companies to launch nationwide facial recognition. In other words, any camera in China can be connected to the police system, and the fugitives, dangerous persons, terrorists, etc. can be identified and notified to the police immediately. At the same time, based on the information gathered by the public, the goals of these people can be inferred easier.

One example, in 2018, during a concert tour of a famous Chinese singer, a total of 69 fugitives were arrested through facial recognition and security checks at the entrance. Many fugitives were directly captured by the waiting police when they left the scene. It has to be said that this safeguards social justice, increases the rate of detection and reduces the cost of police dispatch.

Now let's discuss the impact of the predictive policing system on society.

1. Reduces the probability of a second crime.
2. Reduce the cost of police. Because the cost of crime prevention is always lower than that of stopping crime.
3. As the frequency and scale of crimes have decreased, the people's sense of security has increased. The increase in people's sense of security has made the social environment safer and industrial and commercial activities more prosperous.
4. In turn, more prosperous industry and commerce provided more adequate taxation. Adequate taxation makes the police better equipped, more personnel, and better treatment. Thereby, a safer and more harmonious social environment can be created and a positive cycle can be formed.

All in all, the early warning of the predictive police system will effectively reduce crime, maintain public order, and reduce the workload of the police. Just like a Chinese saying, take precautions before they happen.

2.2 Analyze misconduct among policing

Fairness in policing, driven by the effective and transparent investigation and remediation of police misconduct, is vital to maintaining the legitimacy of policing agencies, and the capacity for police to function within society.

I read an article and a study about New South Wales police misconduct is really interesting. Because machine learning can be used not only to predict crime, but also to check the black sheep in the police force.

This study is best described as a secondary data analysis, applying machine learning analysis to a naturally occurring data (Lester et al. 2017). A maximum sample size of 1200 officers was available, which was determined sufficient to satisfy the methodology. Officers who have been subject to substantiated findings of serious misconduct ($n = 600$) were randomly sampled from between January 2003 and October 2016, this constituted a 30 percent sample of officers who have committed serious misconduct across this time period.

The findings of this research support the use of data driven analysis in the analysis of police misconduct, however many of these results adhere to conventional wisdom. The finding that prior behaviour is predictive of future behaviour, particularly regarding deviance, was not novel.

In terms of social impact, police officers represent the government when performing official duties, fairness and justice. Through the analysis of misconduct behavior of police officers, violence and unfair can be effectively reduced. The government can get a higher rate of support, the decree issued will be

easier to implement, the social security will be more harmonious, and the cost and risk of the police will be reduced.

2.3 Predict the costs of criminal justice policy interventions

Crime prevention requires decisions regarding the use of inputs and how these inputs translate into the most effective and sustainable outcomes. The choice of intervention will be influenced by factors including, but not limited to, budget, the crime problem being addressed, the environment in which the crime is taking place, social and ethical considerations, and judgements about the relative effectiveness of alternative interventions. The decision about what is the most efficient allocation of resources for crime prevention is not an easy one because:

1. Budgets are limited and attempting to anticipate the costs associated with an intervention is difficult, typically based on previous implementations in other jurisdictions and locations.
2. The cost and effect of intervened different types of crimes is also different.
3. Appropriate resource allocation for areas with high crime rates.

To make this decision effectively, empirical evidence regarding the costs and benefits of alternative actions needs to be undertaken. Policy-makers are presented with three critical questions the answers to which inform decisions about the allocation of resources to a given course of action: what does the intervention cost? how effective is the intervention? and, what are the externalises (i.e. positive and negative social-effects)? Here we only analyze the social impact of machine learning on the prevention of crime.

The first is the issue of cost. Because Budgets are limited and attempting to anticipate the costs associated with an intervention is difficult, typically based on previous implementations in other jurisdictions and locations. Therefore, it is very necessary to formulate the best plan. For instance, if there is a robber in the street, then based on the previous experience, only two police officers carrying pistols can complete the intervention. This is the lowest cost. So the machine learning model is supposed to help the commander find the nearest and qualified police officers. Thus the commander can make optimal decision and give the right order to the right people. Effective and rapid intervention can effectively reduce the losses caused by crime, increase the prestige of the police, and deter criminals. Thereby creating a safer environment.

For the second issue, in an era when there is no machine learning and artificial intelligence in the police system, it is very difficult to properly allocate appropriate resources to intervene in crime. Because at that time, reports of criminal incidents only came from the phone calls of the masses. Some people may describe it too exaggeratedly, and some people may describe it too simplistically. In Hong Kong at the end of the last century, there were several failed interventions due to the wrong estimation of crime scale.

$YeJiHuan$, who is a famous robber in Hong Kong. He buys munitions from Vietnam, such as automatic rifles(AK-47),machine guns, grenades, body armor and other military materials. And summoned a group of former soldiers as partners. Crazy looting of luxury stores in central Hong Kong. At first, the police were inadequate and poorly equipped because the commander did not give the right order and correct information. They were unable to stop the robbers from escaping and suffered heavy losses. The resulting social impact is that many people are afraid to go there to work, shop or even pass. The economy in the central area of Hong Kong has become very sluggish. And after seeing the fragility of the Hong Kong police, many people rushed to imitate $YeJiHuan$, and more robbers with guns appeared, further exacerbating the chaos in Hong Kong. In the following years, the Hong Kong police put more resources, improved the alarming system, equipped better weapons for police and established a special police force, which eventually killed the famous robber.

Dealing with powerful criminals requires spending more resources to achieve results. If you spend less, you may not be able to effectively intervene in crime, but will have a bad impact. Give the public a feeling that the police are very weak. On the contrary, crimes will increase sharply and social security will be undermined. Conversely, if every criminal spends a lot of resources, it will lead to a great waste of social resources. Because many small crimes do not require a lot of investment. In fact, large-scale serious crimes are not common.

Last but not least, the correct allocation of police resources can effectively prevent the occurrence of crimes or intervene in crimes quickly and effectively. The machine learning model can record different

crime rates in different areas, conduct high-frequency patrols in areas with high crime rates, and be equipped with better equipment. Reduce the frequency of patrols in areas with low crime rates. This can effectively prevent and interfere with crime while saving costs and reducing risks.

3 Conclusion

Through the reading and analysis of some articles and cases, I believe that machine learning has very positive significance for the police and justice in modern society.The application of machine learning in the police and justice can effectively increase their efficiency, reduce costs, and reduce risks. A suitable machine learning model can have a very positive impact on society. In a nut shell, technology changes the world.

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