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## Police ACTIVITIES In the Age of BIG DATE Utilization

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### Abstract

*The purpose of this research is to search the precondition and discuss at time of building the crime forecast program through the discussion for the utilization of big data for the active utilization of security information.*

*Nowadays, crime forecast systems utilizing the crime information as it enters into the era of information utilization from the era of information collection are being attempted. The more information is, the higher the crime forecast system becomes precise and the prediction rate becomes high.*

*However, points that the invasion of privacy, information country, the surveillance government and the infringement of the personal information, etc. should be discussed exist. Accordingly, what should be preconditioned for the public order of utilization era of big data has been suggested. As a result of discussion, first, the understanding for the police activity utilizing the big data should be preceded. Secondly, the social agreement for the utilization of big data for the utilization of crime forecast system should be drawn. Thirdly, the collection agency should be procured variously. Lastly, the criteria should be prepared so that the numerical value for the forecast may be verified.*

**[Keywords]** *Crime Big Data Utilization, PredPol Program, NGI Program, Compstat, AI-Policing*

## 1. Introduction

We heard a lot about the information age from the late 1990s to the early 2000s. The reason was that as the Internet was widely supplied, we were beginning to use information on the Internet. That period can be called an age when all the information was stored and accumulated in the Internet. As Apple put the iOS-based iPod into the market in 2007 and at the same time Google supplied the Android system, a smartphone became popular. As a result, the Internet connection efficiency was increased.

A change in connection efficiency meant that we went into the information-utilizing age from the information age. Valuable information began to be created instead of mere information being searched for. The

dissemination of a smartphone made it possible to collect, store, and process a wide range of information like search information, geography information, body information, and object information, and the automatic treatment of information turned the existing order into a paradigm in which big data was built up. The South Korean society could predict more precise actions by making use of big data.

As actions could be predicted by making use of big data, a prediction system aimed at preventing crimes began to be developed in other countries. For example, the United States, the United Kingdom, Japan, China and others are constructing crimes-related information prediction programs. In addition, they are focusing their investments on research on crime prediction and public order-

securing systems utilizing artificial intelligence as well as big data. As a result, some programs have already been implemented as a prototype and its effects have also been verified.

However, the introduction and utilization of the crime prevention programs must be preceded by the collection and process of big data. Now is also the time when we begin to discuss the issues of an Internet state, private information protection and infringement on privacy as they are still at the heart of controversies.

Therefore, this study is aimed at presenting why police activities are needed in order to secure public order in the artificial intelligence age and seeking to find more effective police activities by having a discussion about the intelligence -oriented police activities which should be premised in police activities in the artificial intelligence age.

## **2. The Understanding of Police Activities Utilizing Big Data**

Nowadays, we can have access to information anytime and anywhere by utilizing personal assistants like a smartphone. Thanks to smartphone's cameras, sensors(GPS, Fin Tech, and others), and access record classification programs(data treatment technology), the paradigm related to the collection, supply, and process of information has changed into a two-way information sharing dimension from a one-way information supply dimension.

Already-formed information sharing has recently maximized the efficiency of information utilization by analyzing big data and introducing artificial intelligence. Intuitive activities through experience in the past have changed into scientific technologies utilizing statistics, and moreover, the AI-based prediction technology has reduced the danger of a social system.

The public police activities utilizing information are not a concept which was recently developed. The policing was secured by working out problems based on the collection and analysis of information on them through problems-oriented policing in the traditional police activities age. Tools designed to collect and ana-

lyze information like the SARA(Scanning, Analysis, Response, Assessment) model were also utilized in order to more precisely analyze information.

Later, the police increased citizens' activities by reducing disorderly activities and fear of crimes in the local society in the local society police activities age, and such philosophy and strategies led to the collection of information by obtaining crime information and securing witnesses, making the public order firmly established.

As computers began to be fully utilized in the public order field later, the Compstat introduced by the New York City Police Department in 1994 made it possible for information to be efficiently analyzed and processed, and the application of communication and statistics techniques led to a stage at which the public order was established by introducing scientific analysis techniques like geography profiling and criminal profiling. It is a crime prediction system utilizing big data that was a step further advanced related to such achievements[1][2][3].

## **3. The Current Situation of Policing Program Development in Major Countries and Their Police Activities**

A variety of policing technologies, which make use of big data, attempt to predict the prevention of crimes in the United States. The New York City Police Department introduced a crime prediction program called Compstat(the abbreviation of compare and statistics) in 1994. The program points out an area where crimes are most highly likely to take place every morning in terms of probability by analyzing the previous crime data. When it comes to each individual program's development, UCLA developed "the PredPol program," which was designed to predict areas where crimes are most highly likely to take place in terms of probability by analyzing crimes for the past seven years. Later, the Santa Cruz Police Department began to utilize the PredPol program by upgrading it in a way that it can predict the likelihood that subsequent crimes will take place with the help of its function to analyze crime patterns. As a result, the accuracy rate

of prediction stood at 71%, and the robbery rate in July when it was first introduced went down by 27% compared with the same month of the previous year[1][4]. IBM developed a program called "i2 coplink on cloud," which predicts crime patterns on the basis of a data analysis function and is equipped with the function to make it visible to point out an area where crimes are likely to take place by marking it on the map. The Texas University developed "an action analysis CCTV system", a higher-level of system which can identify a criminal by applying the facial recognition technology and the big data technology. When it comes to government agencies, the Federal Bureau of Investigation developed "the NGI program" and is now using it. This program identifies a criminal through the body database like facial pictures, iris recognition, and voices[5].

The Durham City Police Department of the United Kingdom introduced the 'HART' (Harm Assessment Risk Tool), an artificial intelligence program in May 2017 in deciding whether a suspect would be detained. HART presents whether and how long a suspect will be detained and on what conditions the suspect will be released on bail by measuring the second offense rate of the suspect through the three-stages (high, usual, and low). The prediction accuracy rate turned out to be 88~98% at an initial tests in 2013. A number of British law enforcement agencies are considering introducing HART.

The Chinese government is also preventing crimes through artificial intelligence. The Chinese Police Agency built up 'the Sky Net,' a criminal surveillance system which utilizes the GPS of artificial satellites and as many as 20 million CCTVs across the country. According to the People's Daily, China used the Sky Net last year to arrest 1,032 crime offenders hiding out overseas in around 70 countries. The Chinese Police Agency is pushing forward with a project to develop a facial recognition system in association with Is-vision, a security company.

## **4. Implications and Policy Suggestions**

### **4.1. The dilemma and social consensus of an internet intelligency state**

In order to build up a crime prediction system utilizing big data, information in the past and present should be collected at real time. The more information we have, the more accurate action prediction can become. In other words, it means that if all the information across the world is connected and collected, crimes can be more perfectly predicted. The Chinese Police Agency is pushing forward with a project to develop a facial recognition system in association with Is-vision, a security company. It is expected that a criminal can be identified within three seconds by relying on the program.

In spite of various positive aspects, many people are concerned about the side effects of an Internet information state like human rights violation and infringement on privacy information. The Human Rights Watch, an international human rights organization, pointed out in its report that the Chinese government collects all the information concerning dissidents or ethnic minority groups including medical records, contraception methods, and supermarket delivery records, and predicts their action types[3][4]. In the United Kingdom, people feel resentful that HART information is senselessly treated. Therefore, social consensus on information collection should be reached in advance.

### **4.2. The diversification of collection channels**

A crime prediction program utilizing big data can make a more accurate prediction through various and enormous information. In order to do so, collection channels for information should be diversified. The reason is that the collection channels possessed by the police are limited. As a result, all the information possessed by the whole criminal justice agencies and the whole social organizations related to the police should be able to be utilized. In order to build up such a system, the cooperation among agencies and legislation can be the only answer for that goal. In addition, cooperation experts should

be deployed to each agency, so necessary information should be restrictedly shared.

### 4.3. Verification research on prediction numbers

The prediction of crimes is much more difficult than that of natural phenomena. The reason is that crimes are committed by human beings and that crimes are characterized by traits like abruptness and sporadicness. Therefore, a crime prediction measurement method which can be verified should be developed and further, the crime prediction programs should be verified as well.

## 5. Conclusion

The information utilization of big data by a scientific analysis is extremely meaningful in the field of public order. The reason is that the success or failure of crime prediction is decided by information. The crime prediction has not been effective and scientific so far in preventing crimes since it has been dependent on investigators' intuition, intelligence obtained by simple inquiry, or report by citizens. In many cases, admissibility of evidence has been ruled out. Rather, the public order has been maintained by resolving crimes through physical evidence like CCTV, fingerprints, and trace evidence which were obtained after crimes.

However, as science has advanced, crimes can be predicted by making use of big data. Some countries have actually implemented a prototype of crime prediction program and succeeded in producing tangible results. In my personal judgment, crime prediction programs utilizing big data will be aggressively introduced. Nevertheless, considering that the Internet state, infringement on privacy, and personal information violation still remain unresolved, social consensus should be reached to find a solution to them. What is more, in order to more accurately predict crimes, collection channels should be diversified and verification should also be precisely carried out.

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#### Major career

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