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# Interaction of traffic police with motorized vehicle control by CCTV

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**Abstract.** The rapid technological developments can help traffic police in interacting with motor vehicle users on the highway. With the installation of closed circuit television (CCTV) so traffic disturbance and crime on the highway will be minimized because traffic flow can be monitored. If there is a traffic jam, then the traffic police officers will be able to cope. In other, if there is traffic light that goes out and accidents can be handled immediately. If there are criminal incidents on the highway can also be quickly known. The purpose of this research is to prevent and reduce crime and traffic accidents on the road with the installation of CCTV. The method used is empirical juridical, with primary and secondary data, and qualitative analysis presented descriptively. The result is that the installation of CCTV causes a significant reduction of crime. CCTV cameras mounted on red lights and busy intersections will provide information for traffic officers. It can also be combined with sensors that can capture vehicles that violate the maximum speed limit and also recording images proof with the date and time of the incident. accidents caused by drivers who break through red lights have decreased after the CCTV installation.

## 1. Introduction

The rapid development of Information Technology has benefited in various life joints. With the rapidly evolving technological developments, the technology also develops for security surveillance system. This development is very helpful for security officers in carrying out surveillance. There are several technologies in doing security monitoring that are widely used, among others, is Closed Circuit Television (CCTV). CCTV has the ability to record and observe an object continuously every time so it is useful for security within a building or road monitored by security personnel.

Lately there is an increase in the number of means of transportation caused by the addition of the number of residents from year to year. This ultimately becomes an obstacle in traffic management on congestion-prone roads. Along with technological advances, there are many various methods support the setting of traffic light. One of the method that is developing today is the use of CCTV. CCTV is usually used for security systems in business premises. This becomes an opportunity to integrate CCTV on traffic light settings. By integrating between camera and traffic lights it is expected that the traffic light system can analyze the road traffic level and calculate the timing of traffic lights automatically and in real time. Traffic light system with this camera works based on input in the form of capture images through camera. Then the image is processed from RGB format to grayscale. From the image matrix was searched for the road area which is covered by means of transportation. The



result is used for a timing of traffic lights and is supplied to hardware via parallel ports. All matrix and interface process calculations are processed through MATLAB software [1].

Intelligent image detection systems are part of a centralised approach to modern day traffic management. This has arisen from the need for more cost effective and efficient monitoring of traffic. Traffic monitoring CCTV tends to be unique in that it includes high camera numbers, is in the public domain and contains long transmission paths (up to 40km) [2]. For private and public vehicle riders, it should be more disciplined when driving. the police have installed a number of Closed Circuit Television (CCTV) in some places. The use of CCTV will help the police, to detect and crack down on drivers who often violate traffic rules, especially in big cities in Indonesia. More control should be done by the police so that violations can be mitigated, and urban traffic conditions become more orderly and neat. CCTV schemes along with other security initiatives are understood as social ordering strategies emanating from within locally powerful networks which are seeking to define and enact orderly regeneration projects [3]. The purpose of this research is to prevent and reduce crime and traffic accidents on the road with the installation of CCTV. Based on the background, the problem which raised is: How to interact traffic police with vehicle users through CCTV?

## 2. Method

The research method used is empirical juridical, with primary and secondary data, and qualitative analysis presented descriptively. This study uses conceptual approach and statute approach. The conceptual approach goes from the views and doctrines that develop in the legal studies. In this approach the authors are expected to find ideas that produce legal meaning, legal concepts, and relevant legal principles. The research was conducted by conducting interviews and taking data at Indonesian republic police.

## 3. Results and discussion

### 3.1. Interaction of traffic police with vehicle users through CCTV

Indonesia knew about CCTV around 1995, and it has been used was only in big offices. In 1998, the use of CCTV was increasing. And in 2004 police began to use CCTV in public area as traffic monitoring. the development of CCTV is more modern in terms of image resolution, size, usage and systems used CCTV. One of the most practical tools for urban traffic monitoring is CCTV imaging which is widely used for traffic map generation and updating through human surveillance [4]. High-resolution CCTV is installed for the purpose of disciplining traffic because it can record trespasser of red lights, even the camera is capable of photographing the license plate as evidence of a traffic violation. camera installation on every road to reduce, put down and stop crime. With the use of CCTV if there are suspicious people the police easily find the person with the CCTV recordings.

The workings of CCTV are quite practical and simple, CCTV will continue to monitor all the events and behavior of motorists on the highway and at certain places of frequent violations. The CCTV is connected with a speaker to remind and act on the driver directly if the violation is considered small. Furthermore, if there is a traffic violation, CCTV will capture the image or record the violation, then the picture and video will be processed to get the driver identity such as the vehicle license plate number, the driver identity, to the address where the driver is staying. People can be inaccurate at matching unfamiliar faces shown in high-quality video images, even when viewpoint and facial expressions are closely matched. However, identification of highly familiar faces appears good, even when video quality is poor [5].

As a comparison CCTV cameras in Newark, CCTV cameras in Newark, We present a test of the crime-deterrent effect of police-monitored street-viewing CCTV cameras using viewsheds of areas that were visible by cameras via direct line-of-sight and that were digitized using easily replicable methods, Strategically-placed cameras were not any different from randomly-placed cameras at deterring crime within their viewsheds, Results of a system-wide evaluation of CCTV cameras should not be the only basis for endorsing or contesting the use of CCTV cameras for crime control or prevention within a city. Future research should test whether the effectiveness of CCTV cameras is

dependent upon the micro-level attributes of environments within which they are installed [6]. An often-neglected element of the CCTV task is that the operators have at their disposal a multiplexed wall of scenes, and a single spot-monitor on which they can select any of these feeds for inspection [7].

### 3.2. *CCTV benefits in crime prevention*

In recent years, there has been a marked and sustained growth in the use of closed circuit television (CCTV) surveillance cameras to prevent crime in public places in the USA and other Western nations. Amidst this expansion and the associated public expenditure, as well as concerns about their efficacy and social costs, there is an increasing need for an evidence-based approach to inform CCTV policy and practice. This paper reports on an updated systematic review and meta-analysis of the effects of CCTV on crime in public places. Evaluations were included if CCTV was the main intervention and the design was of high methodological quality. Forty-four evaluations met the inclusion criteria. The results suggest that CCTV caused a modest (16%) but significant decrease in crime in experimental areas compared with control areas. This overall result was largely driven by the effectiveness of CCTV schemes in car parks, which caused a 51% decrease in crime. Schemes in most other public settings had small and nonsignificant effects on crime: a 7% decrease in city and town centers and in public housing communities. Public transport schemes had greater effects (a 23% decrease overall), but these were still nonsignificant. Schemes evaluated in the UK were more effective than schemes evaluated in the USA and other countries, but this was largely driven by the studies in the car parks [8].

The studies included in the meta-analysis used an experimental quasi-evaluation design involving both criminal and before-and-after acts done in the experimental and control areas. However, some researchers have pointed to the methodological issues associated with this research literature. First, researchers argue that car park studies included in the meta-analysis cannot accurately control the fact that CCTV is introduced in conjunction with a series of other security-related measures. Secondly, some have noted that, in many studies, there are many problems with selection refraction because the introduction of CCTV is potentially endogenous to previous criminal trends. In particular, impact of refraction if CCTV is introduced in response to crime trends.

It has been argued that selection and endogenous reactions can be suppressed by stronger research designs such as randomized controlled trials and natural experiments. The 2017 review published in the *Journal of Scandinavia Studies in Criminology and Crime Prevention* collected seven studies using such research designs. Studies included in the review found that CCTV reduces crime by 24-28% in public streets and urban subway stations. He also found that CCTV can reduce misbehavior in football stadiums and burglaries in supermarket / bulk merchant stores. However, there is no evidence that CCTV has the desired effect on parking facilities or subway stations. Furthermore, the review indicates that CCTV is more effective in preventing property crimes than violent crimes.

Poorly managed traffic incidents have largely contributed to congestion and delay, thorough understanding of travel delays caused by incidents is therefore essential for effective countermeasures against the increasing congestion [9]. Adaptive traffic light control system can be used to solve traffic congestions in an intersection because it can adaptively change the durations of green light each lane in an intersection depend on traffic density. The proposed adaptive traffic light control system prototype uses Beagleboard-xM, CCTV camera, and AVR microcontrollers [10].

## 4. Conclusions

Traffic police interaction with motor vehicle users in the presence of CCTV installation leads to a significant reduction in crime. CCTV cameras have been put on red lights and busy intersections will provide information for traffic officers. It can also be combined with sensors that can capture vehicles that violate the maximum speed limit while recording images proof along with the date and time of the incident. accidents caused by drivers who break through red lights have decreased after the installation of CCTV cameras on the highway.

## References

- [1] Samuel Christian Susanto, Budi Setiawan and Erdhi Widyarto *Perancangan pengaturan sistem traffic light dengan cctv dinamis: deteksi kepadatan jalan dengan citra digital pada maket jalan simpang empat* <http://repo.pens.ac.id/53/1/27d061313e6e5432d4d70c3829ed.pdf>
- [2] Norbert Buch, Mark Cracknell, James Orwell and Sergio A Velastin 2009 *Vehicle Localisation And Classification In Urban Cctv Streams* (ITS World Congress)
- [3] Roy Coleman and Joe Sim 2000 'You'll never walk alone': CCTV surveillance, order and neo-liberal rule in Liverpool city centre *THE BRITISH JOURNAL OF SOCIOLOGI* **51** 4 p 623-639
- [4] Zarrinpanjeh N, Dadrassjavan F, Fattahi H 2015 A Photogrammetric Approach For Automatic Traffic Assessment Using Conventional Cctv Camera *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences* XL-1-W5 p 763-767
- [5] Bruce, Vicki Henderson, Zoë Newman, Craig Burton and Mike A 2001 Matching identities of familiar and unfamiliar faces caught on CCTV images *Journal of Experimental Psychology: Applied* **7** 3 p 207-218
- [6] Caplan J M, Kennedy L W and Petrossian G 2011 Police-monitored CCTV cameras in Newark, NJ: A quasi-experimental test of crime deterrence *Journal of Experimental Criminology* **7** 3 p 255-274
- [7] Matthew James Stainer, Kenneth C Scott-Brown and Ben eTatler 2013 Looking for trouble: A description of oculomotor search strategies during live CCTV operation *Frontiers in Human Neuroscience*
- [8] Brandon C Welsh and David P Farrington 2009 Public Area CCTV and Crime Prevention: An Updated Systematic Review and Meta-Analysis *Journal Justice Quarterly* **26** 4
- [9] Muhammad Febrian Rachmadi, F Al Afif, M Anwar Ma'sum M Fajar and A Wibow 2012 Beagleboard Embedded System For Adaptive Traffic Light Control System With Camera Sensor *Jurnal Ilmu Komputer dan Informasi* **5** 2 p 63-71
- [10] David Mfinanga and Emmanuel Fungo 2013 Impact Of Incidents On Traffic Congestion In Dar Es Salaam City *International Journal of Transportation Science and Technology* **2** 2 p 95-108