



Research and Development of Tracking and Arresting Criminal Systems Using Artificial Intelligence Technology

Muang Chonburi Police Station

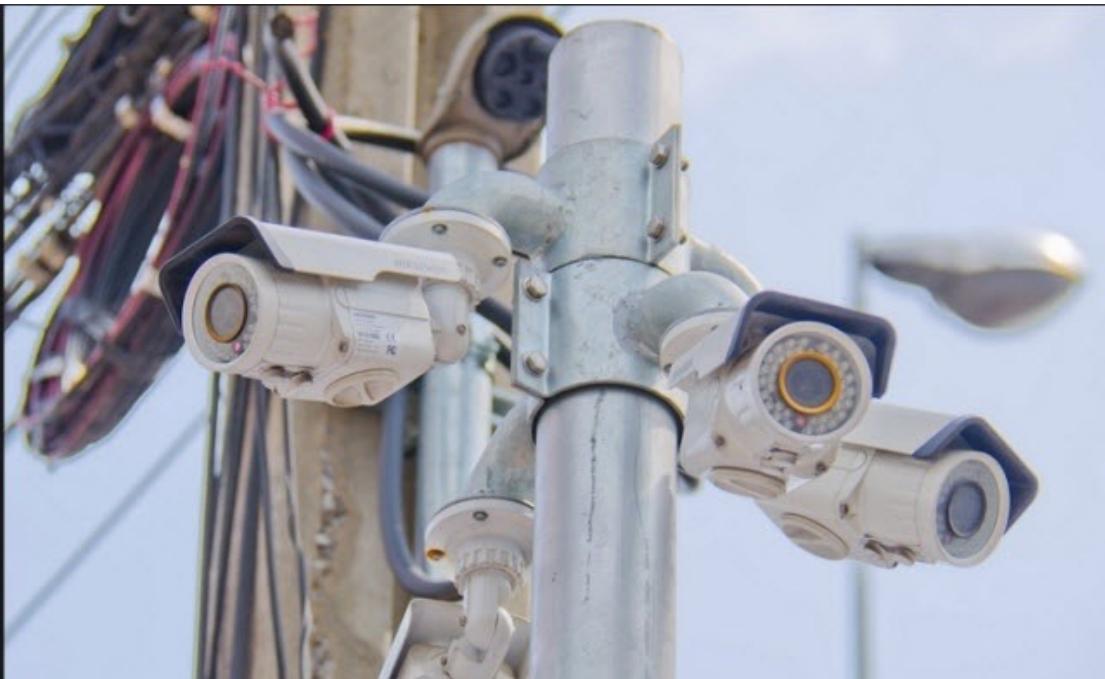
Dr.Thittaporn Ganokratanaa, KMUTT

Outline

- Problem Statement
- Environment Settings
- Methodology
- Results, Outputs, Impacts
- Conclusion

Problem Statement

**“Old Solution: Security Staffs
watch the CCTV and people”**



Example of CCTV Control Room at Chiang Mai

**“More than 15,000 CCTV cameras in
Three Southern Border Provinces.”**

Problem Statement

Big Data Storage



Source: <https://www.tcgdigital.com/big-data-advanced-analytics/>

Problem Statement

Welcome to Datacrime
<http://www.datacrime-cti.com/>



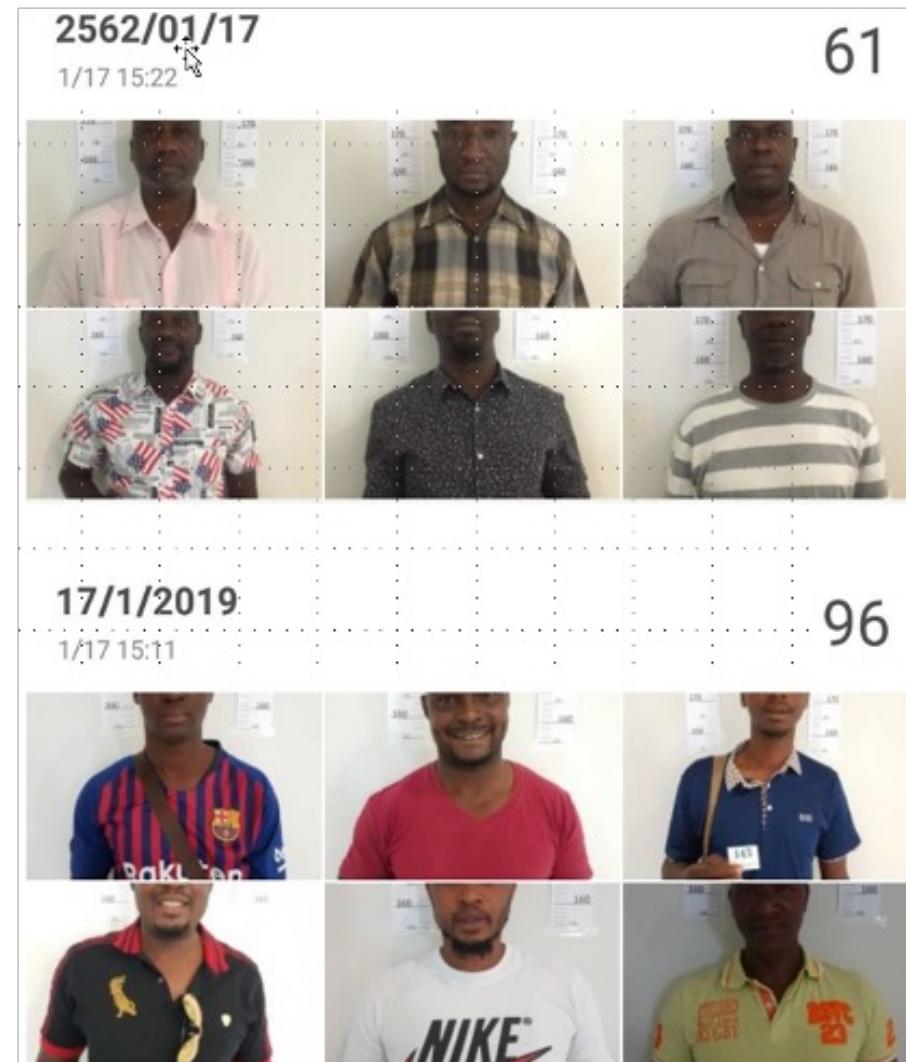
ระบบฐานข้อมูลบุคคลกลุ่มเสี่ยง ก.จ.จังหวัดชลบุรี

Chanthaburi Police
Database: Collecting
data on target groups
of people and vehicles



Problem Statement

Database of at-risk people



ร่วมในการอัปเดต
คุณทีมงาน

Problem Statement

A database of offender-risk vehicles

ค้นหาข้อมูลบุคคลกลุ่มเสี่ยง

ค้นหาด้วยคำสำคัญ (Keyword)

ประมวลผล 1:

ชื่อ
พิมพ์คำที่ต้องการค้นหา

ชนิดของการเชื่อมคำ 1:

ประมวลผล 2:

ก่อนหน้า ถัดไป เรียบร้อย

ข้อหา/พฤติกรรมที่เกี่ยวข้อง

ประเภทยานพาหนะ

ยี่ห้อ รุ่น และสียานพาหนะ

ป้ายทะเบียน



รถที่เฝ้าอยู่ตัวของ
ก็

Objectives

-
1. To enhance police officers' proficiency in using AI for crime data analysis in Thailand via smart phone, leveraging data collection and investigation of crime data process.

 2. To boost public confidence in crime prevention through the systematic use of intelligent CCTV technology for crime monitoring and evidence recording.

 3. To implement AI-driven technology to alert police of suspicious individuals or vehicles via mobile devices connected to a central server.
-

Problem Statement

A solution for system design of crime prevention

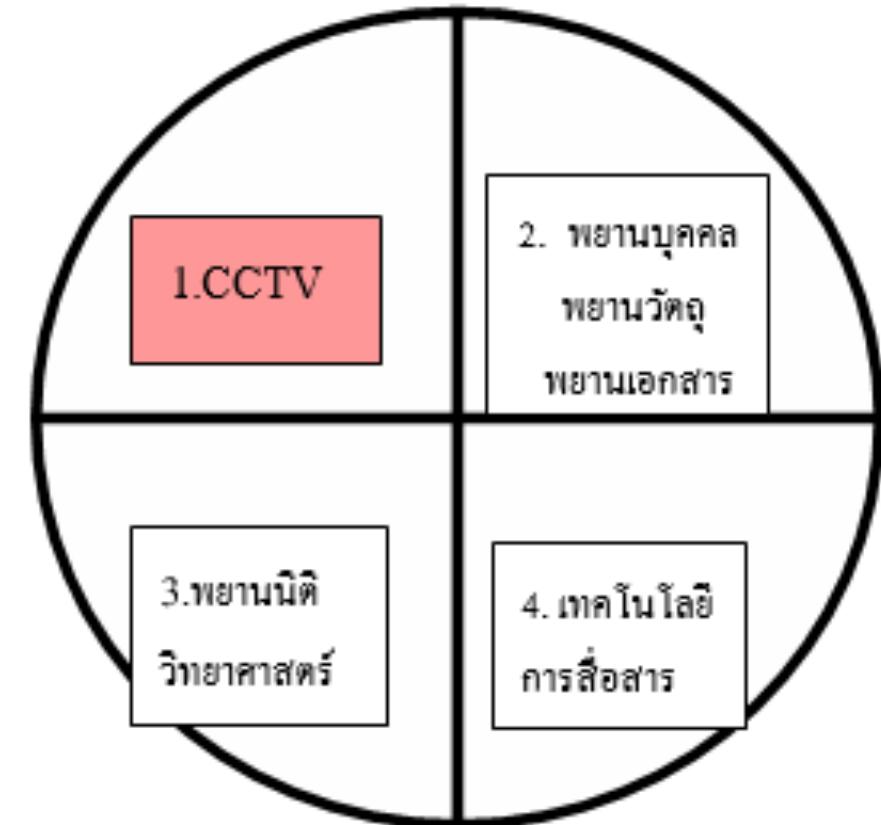


Problem Statement

Knowledge of Modern Investigations

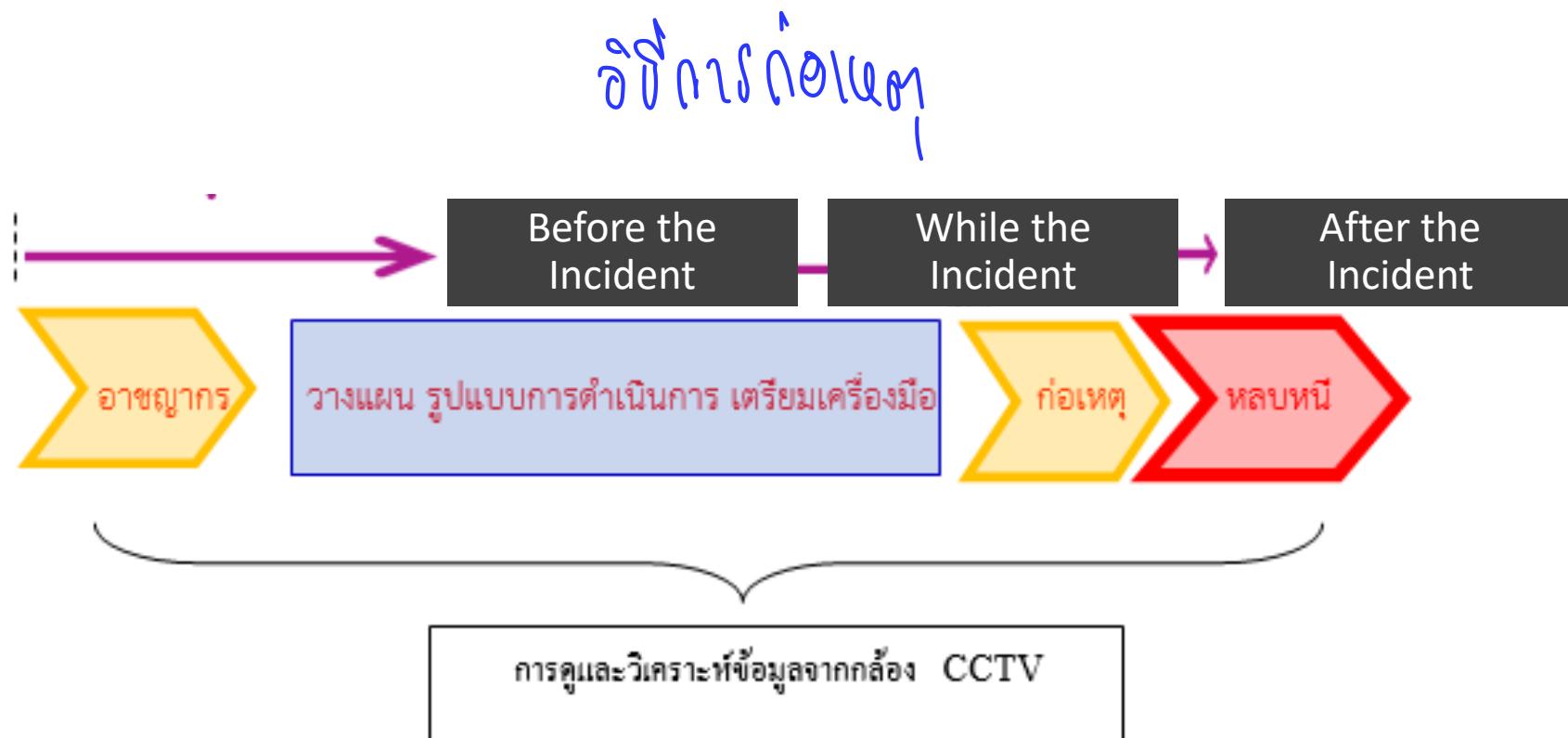
Currently, police officers use investigative knowledge to locate and apprehend criminals, forming the foundation for evidence collection and criminal pursuit. There are 4 elements:

1. CCTV
2. Witnesses, Material Witnesses, Documentary Witnesses
3. Forensic Evidence
4. Communication Technology



Problem Statement

The sequence of events and attributes of criminals are:



SMART CITY – Enhancing quality of life through innovative support.



CCTV camera locations in Chonburi city:

1. Chon Rat Amrung intersection - 4 cameras.
2. Chalerm Thai intersection - 6 cameras.

Environment Settings

Camera Installation

1. Chon Rat Amrung intersection - 4 cameras.



Environment Settings

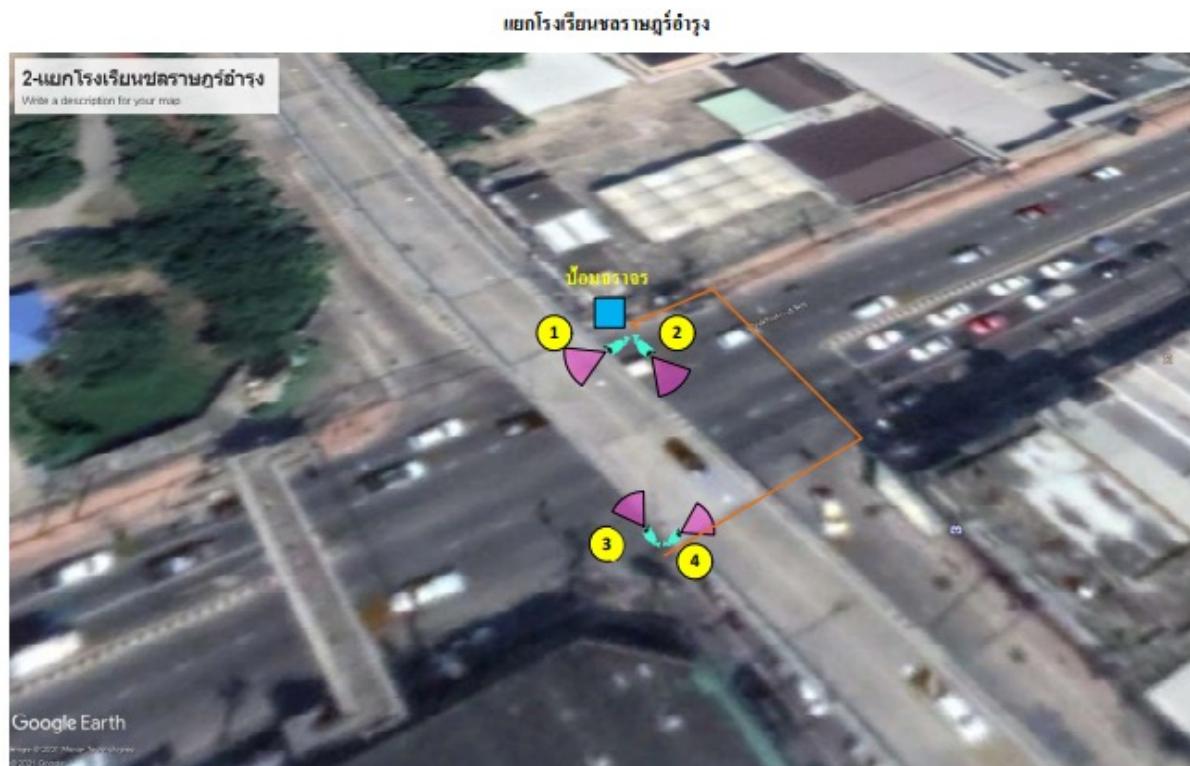
Camera Installation

2. Chalerm Thai intersection - 6 cameras.

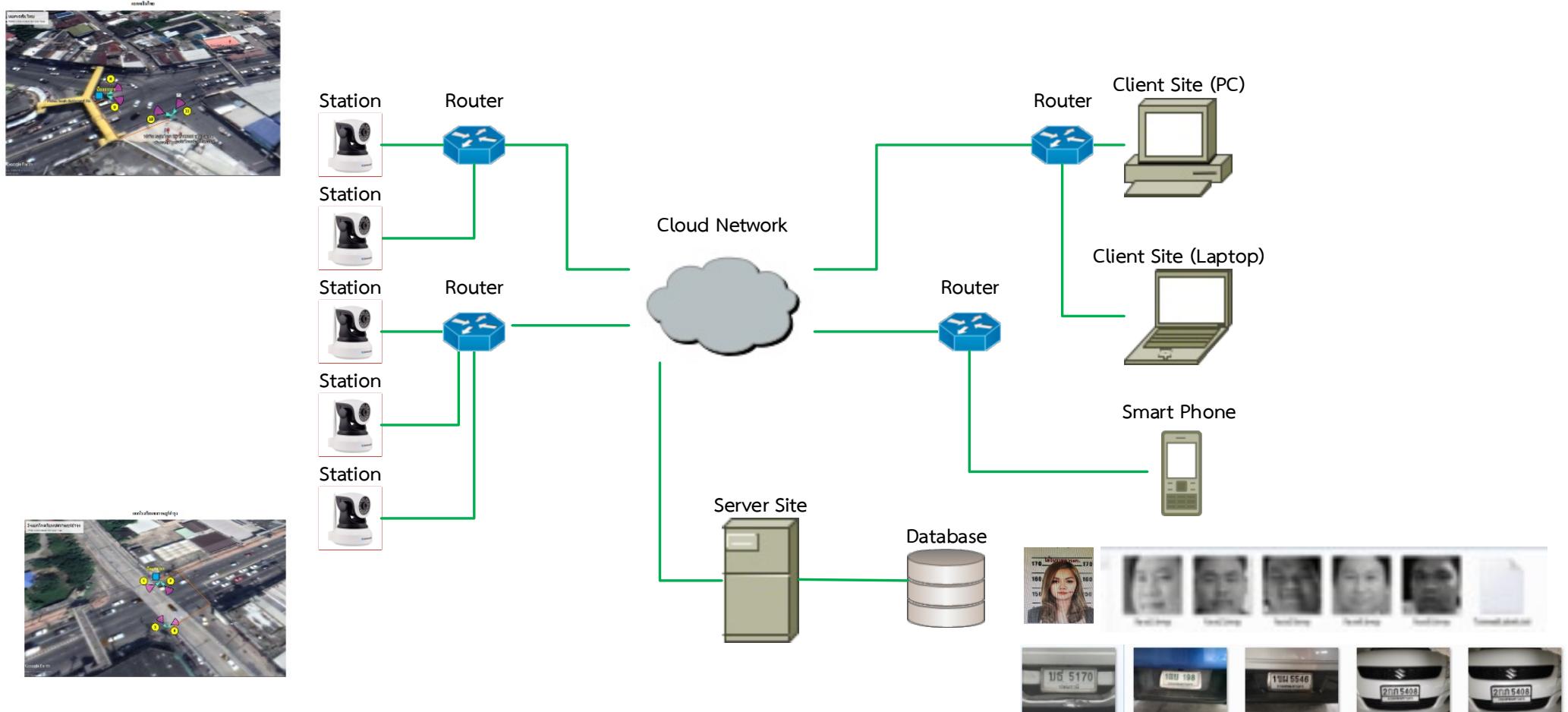


Environment Settings

Camera Installation Location



System Operation Overview



System Operation Overview Research and Development of Tracking and Arresting Criminal Systems
Using Artificial Intelligence Technology

Methodology

The process of tracking by detection

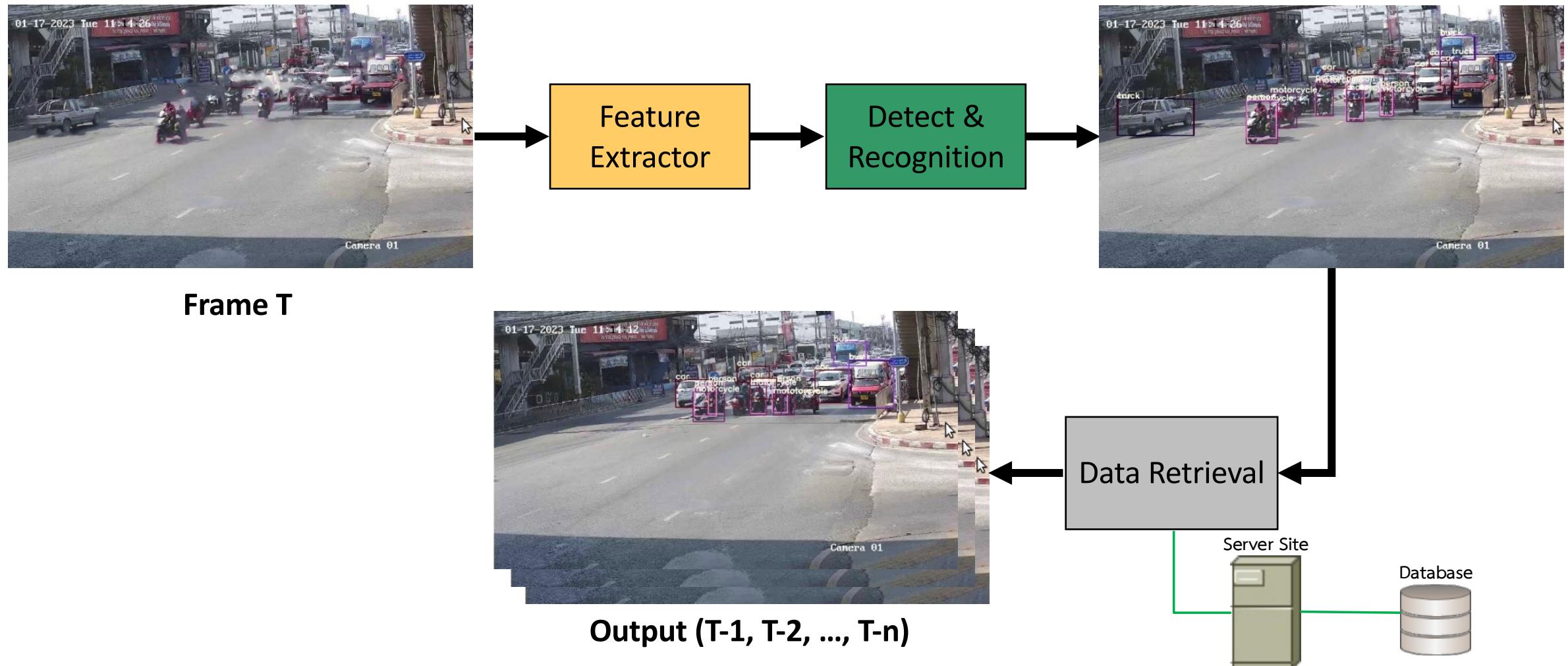


Illustration of the detection, tracking, and recognition procedure

System results

The visual results of system

NIS Detection ការពិនិត្យសម្រាប់រថយន្ត



Examples of results of system

System results

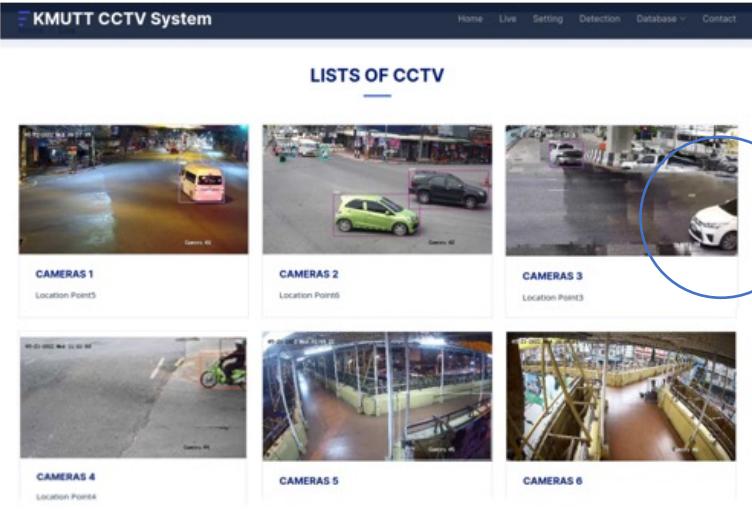
The visual results of system



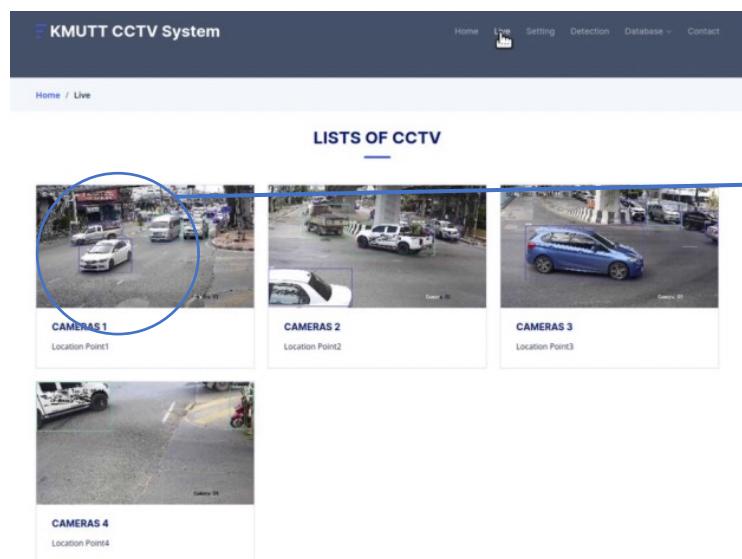
Examples of results of system

System outputs

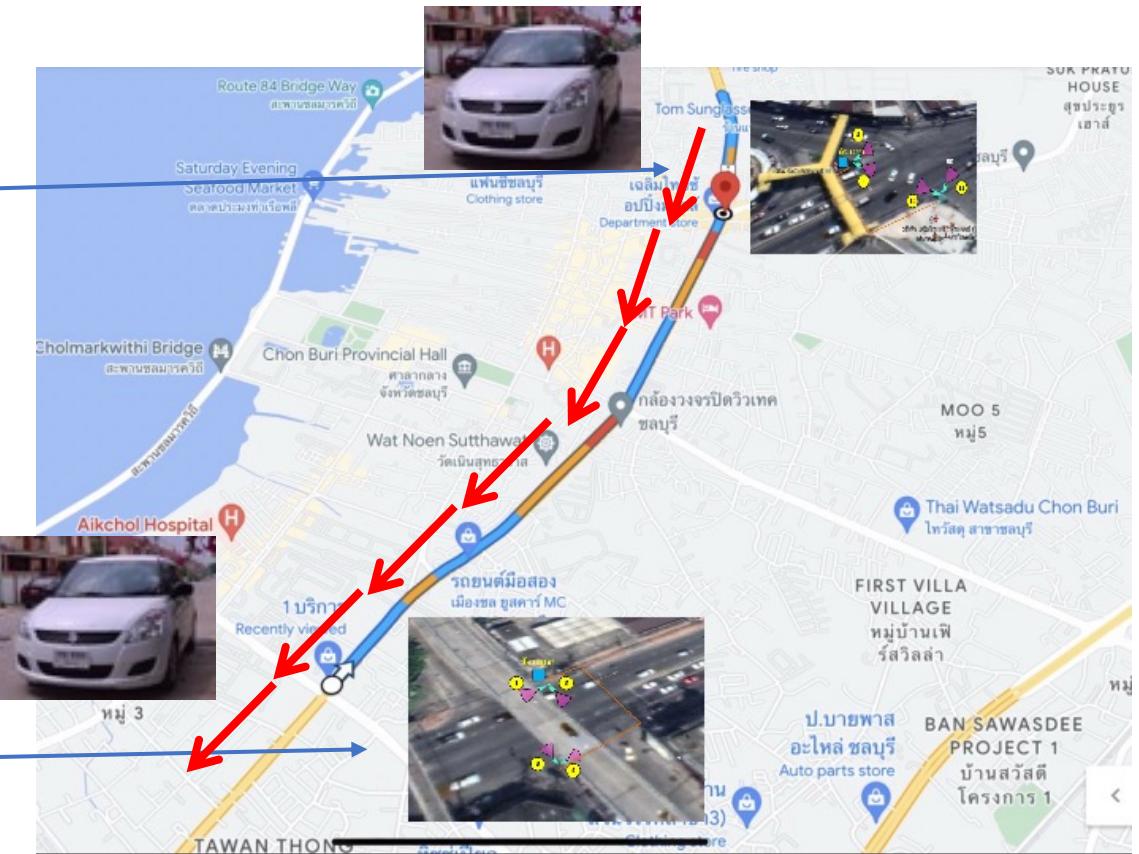
Criminal Arrest Tracking System



2. แยกเฉลิมทราย



1. แยกชลบุรีอัมรรุง



System outputs

System Operation: Add Face

ເພີ່ມແນວໃຈ

KMUTT CCTV System

Home Live Setting Detection Database Contact

Home / Face

Add Face

Select a category
Select a category ...

Create New Category

Select a name
Select a name ...

Create New Name

National ID

Province

Image
Browse... No files selected.

Upload Face Go Back



System outputs

System Operation: Add Vehicle

ບົນດາ

Home / Face

Search

Faces Categories

ALL

- Citizen
- Criminal
- Civil Servant

Add Face

Category: Citizen
Name: Sovann

Category: Criminal
Name: Animal

Category: Civil Servant
Name: Bird



KMUTT CCTV System

Home Live Setting Detection Database Contact

Home / Vehicle

Add Vehicle

Select a category

Select a category ...

Create New Category

Select a name

Select a name ...

Create New Name

Color

Year

License Plate

Image

Browse... No files selected.

Upload Vehicle

System outputs

System performance

ମୁଦ୍ରାବିଧାନ

KMUTT CCTV System

Home Live Setting Detection Database Contact

Home / Detection

Select Cameras Position Confirm

12-06-2022 Tue 12:00 AM in Thailand

Face

Vehicle

Category: Name: National ID: Province:

Category: Name: National ID: Province:

Category: Name: Color: Year: License Location:

Category: Private car Name: Suzuki Color: White Year: 2012 License Plate: 5408 Location: Chonradsadornnumrung

System outputs

System performance

KMUTT CCTV System

Home Live Setting Detection Database Contact

Home / Detection

Select Cameras Position Confirm

12-06-2022 Tue 12:40:39

person person person

Face

Vehicle

Category: citizen
Name: patiyuth
National ID: 3801200013724
Province: Bangkok

Category:
Name:
National ID:
Province:

Category:
Name:
Color:
Year:
License
Location:

Category:
Name:
Color:
Year:
License
Location:

Category: citizen
Name: patiyuth
National ID: 3801200013724
Province: Bangkok

KMUTT CCTV System

Smart CCTV enables remote monitoring of a home or property, connecting to a device such as a smartphone or tablet even when away from the premises.

Contact Us

CCTV

System outputs

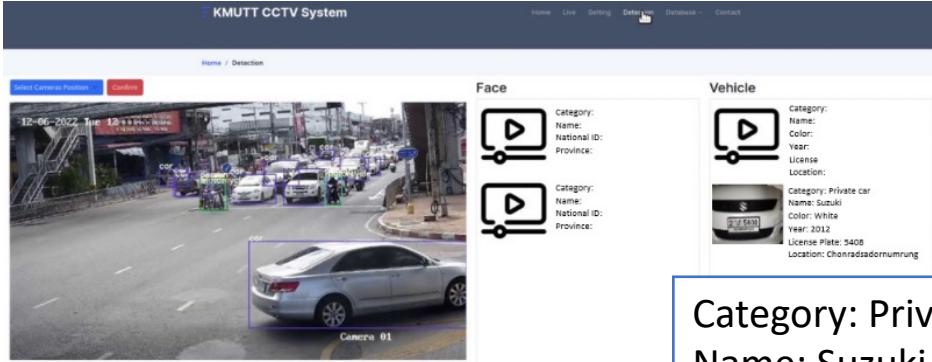
System performance

The screenshot shows the KMUTT CCTV System interface. The top navigation bar includes links for Home, Live, Setting, Detection, Database, and Contact. Below the navigation is a breadcrumb trail showing Home / Setting. The main content area is titled "Cameras Setting". On the left, there is a form titled "Add Camera" with fields for Username, Password, Ipaddress, Port, Channel, and Location, along with an "Add IPcamera" button. On the right, there is a table titled "Camera Information" listing four camera entries with columns for ID, Location, Username, IP Address, Port, Channel, and Action (Edit and Delete buttons).

ID	Location	Username	IP Address	Port	Channel	Action
1	Point1	admin	192.168.100.100	554	3	<button>Edit</button> <button>Delete</button>
2	Point2	admin	192.168.100.101	554	3	<button>Edit</button> <button>Delete</button>
3	Point3	admin	192.168.100.102	554	3	<button>Edit</button> <button>Delete</button>
4	Point4	admin	192.168.100.103	554	3	<button>Edit</button> <button>Delete</button>

System impacts

System performance



Category: Private car
Name: Suzuki
Color: White
Year: 2012
License Plate: 5408
Location:
Chonradsadornumrung



Category: citizen
Name: patiyuth
National ID:
3801200013724
Province: Bangkok

ลักษณะในการทดสอบ

ผลการทดสอบคิด เป็นเปอร์เซ็นต์

1. ผลการทดสอบระบบการจัดเก็บข้อมูลบุคคลกลุ่มเดี่ยว และ
ยานพาหนะต้องส่งสัญญาณไปริสปอร์ท Smart phone

2. ผลการทดสอบระบบแจ้งเตือนคำนวณรูปพรรณรถ และ
หมายเลขทะเบียนรถ (License plate)

3. ผลการทดสอบระบบแจ้งเตือนคำนวณรูปพรรณคนร้าย และ
หมายเลข (Face Recognition)

96

90

90

Extend the System



Extend the system - Thaworn Khao Kluea Checkpoint Border area
Chanthaburi (Thailand - Cambodia)



Using a mobile camera to detect the face of the suspected person



Collaborate with the navy – survey the air space of Narathiwat Province



Narathiwat Airport

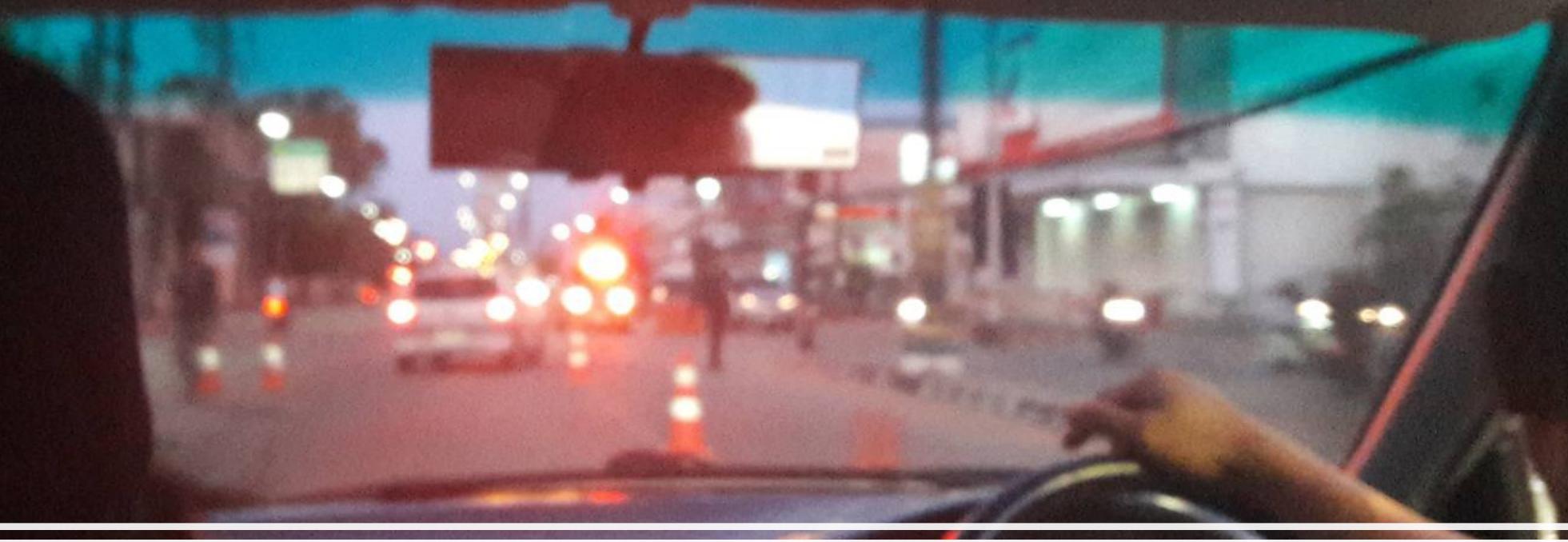


High-angle shot of Narathiwat Province





Joint military and police checkpoint, Narathiwat Province



Joint military and police checkpoint, Narathiwat Province

Conclusion

- The research focused on utilizing AI technology to augment police efficiency in Thailand.
- The study aimed to enhance law enforcement capabilities and bolster public trust in crime prevention measures.
- By employing AI in crime data analysis through smartphones, leveraging intelligent CCTV technology for crime monitoring, and integrating real-time alerts for suspicious activities to police mobile devices.

Q&A

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