

Cách thức phát triển ứng dụng drone


Ứng dụng Drone - 5G - AI
quản lý giao thông tại QTSC



Màn hình quản lý

Widget


- Camera
- Route
- Drone Status
- Violation



DRONE STATUS

2 In-Flight	1 Low Battery	1 Disconnect
Drone No.1 5km/s In-Flight	Drone No.2 0km/s Low Battery	Drone No.3 0km/s Disconnect

ROUTE



VIOLATION

06 Open	03 Reported
04 Progressing	05 Closed

Màn hình thiết lập lộ trình bay

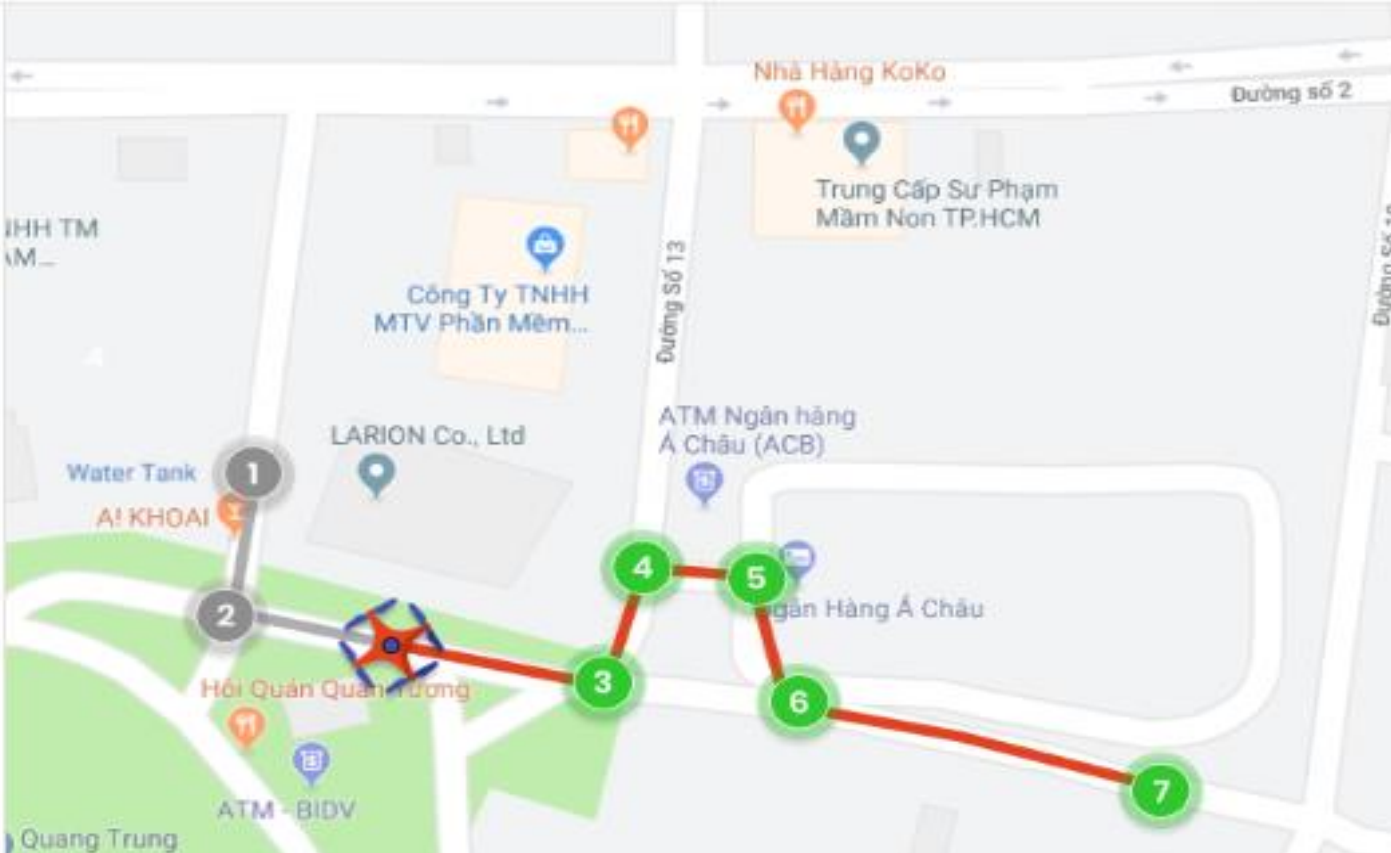
DroneControlPanel Home Drone **Route** Schedule Violation History EN Hii Gim

< QT1 DELETE EDIT

ROUTE NAME: QT1 CREATED DATE: 22/07/2019

ROUTE CHECK POINT DETAILS

- 1 Công Viên Phần Mềm Quang Trung Cổng 1
- 2 Mina Restaurant
- 3 Công Ty TNHH MTV Phần Mềm Phương Hoàng
- 4 Trung Cấp Sư Phạm Mầm Non TP.HCM
- 5 TMA Solutions
- 6 Trường Đại Học FPT
- 7 Công Ty MiSa



Màn hình Drone bay

The screenshot displays the DroneControlPanel web interface. At the top, there is a navigation menu with options: Home, Drone (selected), Route, Schedule, Violation, and History. The user is logged in as Hil Gim. Below the navigation, there are three drone selection buttons: Drone No.1 (highlighted), Drone No.2, and Drone No.3.

The main content area is split into two sections. On the left is a live video feed from the drone, showing a street with parked cars. The feed includes a 'REC' indicator and a timer at 00:00:12. On the right is a map showing a flight path with numbered waypoints (1-7) and a drone icon.

Below the map is a 'SCHEDULE' section with a table:

NAME	ROUTE	START TIME	STATUS	ACTION
SCI	QT1	8:00	In-flight	
SCI	QT2	10:00	Not Start	

Below the schedule is a 'VIOLATION' section with a table:

NAME	ROUTE	DATE TIME	ACTION
51F-141.85	QT1	5/8/19 08:00	Open
58F-021.77	QT1	5/8/19 08:00	Reported
74F-487.00	QT1	5/8/19 08:00	Processing

Màn hình chi tiết lỗi vi phạm

DroneControlPanel Home Drone Route Schedule **Violation** History EN Hii Gim

< VIOLATIONS DETAILS

Plate Number: 51F-141.85 Status: Open

Captured Drone: Drone no.1 Route: QT

Date Time: 05/08/19 - 08:00

CAPTURED PHOTO

The interface displays a detailed view of a drone-captured violation. It includes a navigation menu at the top with 'Violation' highlighted, a user profile 'Hii Gim', and a back arrow. The main content area is titled 'VIOLATIONS DETAILS' and contains metadata for the violation: a license plate number '51F-141.85' with a car icon, a status 'Open' in a red button, the drone used 'Drone no.1', the route 'QT', and the date/time '05/08/19 - 08:00'. Below this is a map showing the location of the violation, marked with a red car icon and the license plate number '53-N3-12345'. The map includes various landmarks such as 'Công Ty TNHH MTV Phần Mềm', 'ATM Ngân hàng Á Châu (ACB)', and 'Ngân Hàng Á Châu'. At the bottom, there is a section titled 'CAPTURED PHOTO' which contains three images: a close-up of the rear of a silver car with license plate '51F 91221', an aerial view of the same car on a road, and a dark, low-angle shot of the car with a '+1' overlay.

Công nghệ

1 MCU

The diagram illustrates three drones, each equipped with a camera and a microcontroller unit (MCU) board. Arrows labeled '5G' point from each drone to a central cloud labeled 'Internet'. This indicates that the drones are connected to the Internet via 5G technology.

2 Bảng điều khiển drone

The top part of the image shows a map of an urban area with several drone locations marked as NO.1, NO.2, and NO.3. Each location has a drone icon and a unique ID: NO.1 (59-A1-00578), NO.2 (62-E3-14785), and NO.3 (49-M5-15468). The map also shows various landmarks like 'TRƯỜNG CAO ĐẲNG SÀI GÒN', 'Nhà Hàng KoKo', and 'Ngân Hàng Á Châu'. Below the map are three camera views: a rear view of a silver Honda City car with license plate 51F 912.21, a top-down view of a car, and a street-level view of a road.

Công nghệ

Data Communication



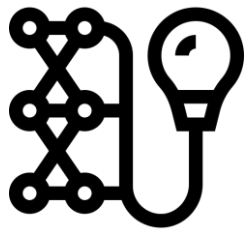
Flight management



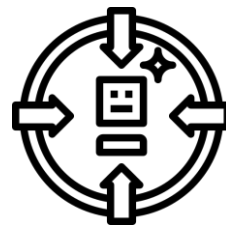
MCU programming



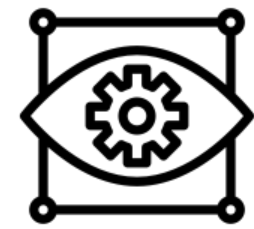
Deep Learning



Moving objects detection



Computer vision



Các bước phát triển ứng dụng Drone

1

**Xác định
bài toán**

2

**Chọn drone
phù hợp**

3

**Chọn
kiến trúc và
công nghệ**

Các bước phát triển ứng dụng Drone

1

Xác định bài toán

- Giao thông
- Nông nghiệp
- Giám sát
- Chữa cháy

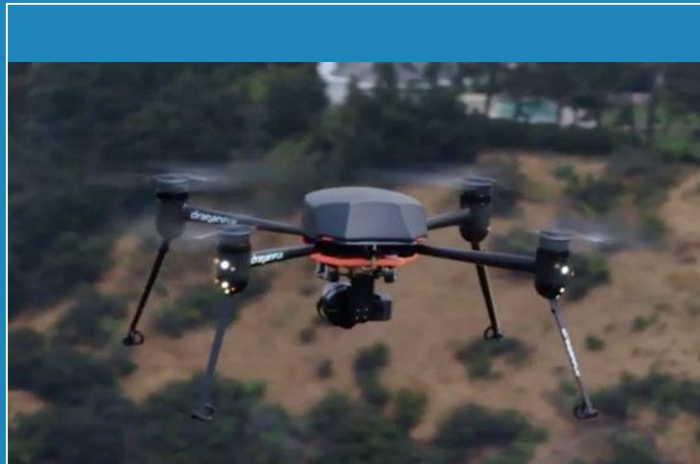
- Người
- Xe
- Cây trồng
- Nhà cửa

Các bước phát triển ứng dụng Drone

2

Chọn drone phù hợp

Trọng lượng, thời gian bay, chi phí...



Các bước phát triển ứng dụng Drone

3

Chọn kiến trúc và công nghệ

Kiến trúc
xử lý tại edge

Kiến trúc
xử lý tại edge +
server

Đường truyền:
4G, 5G...

Question & Answers