

DEFLUX



The Eye In The Sky.

Saving The Earth From Traffic Accidents
And Traffic Jams.



THE THEORY OF TRAFFIC JAMS.

No one likes commuting at a snail's pace yet it happens. The roads are clogged and people suffer. When a car in front does something unusual, drivers often respond by hitting the brakes. That in turn makes the next driver brake. Soon, a wave of commuters are flashing red brake lights. That's when cars end up bumper to bumper.

- Professor Dave



Since traffic jams always happen and there is significant amount of human error involved. By minimizing the continuous flow of hitting brakes Traffic can be made to run more smoother.



Beijing, China: August 2010. Imagine being trapped in a 62-mile long traffic jam that lasted for an incredible 12 days. That's just what happened to the poor folks attempting to traverse the Beijing-Tibet expressways in August of 2010, for which the trip took as long as three days.

- Forbes

STATISTICS

- 1 Nearly 1.3 million people die in road crashes each year, on average 3,287 deaths a day. equivalent to 10 jumbo jets crashing every day.
- 2 An additional 20-50 million are injured or disabled.
- 3 More than half of all road traffic deaths occur among young adults ages 15-44.
- 4 Road traffic crashes rank as the 9th leading cause of death and account for 2.2% of all deaths globally.
- 5 Road crashes cost USD \$518 billion globally, costing individual countries from 1-2% of their annual GDP.
- 6 Unless action is taken, road traffic injuries are predicted to become the fifth leading cause of death by 2030.

Reasons For Car Crashes

- 1 Distracted Driving
 - 2 Speeding
 - 3 Drunk Driving
 - 4 Running Red Lights
 - 5 Improper Turns
 - 6 Potholes
 - 7 Police Chases
- And a honourable Mention





I got this idea when I was reading a newspaper report about increase in the daily accidents. It said that people are losing their lives due to loss of blood as medical services are not able to find any locational data for the victim. Many times accidents can be avoided if people are stopped from jumping red lights or taking wrong turns. The general public would be under constant surveillance and since they know they are being watched the cases of accidents will also decrease. If there is a system that changes traffic routes just in time to avoid a major traffic jam I am sure that it could save a lot of time and money.

WHY THIS IDEA?

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WHAT ARE THE MAIN STEPS?



Identification

A Drone will be Designed To Fly Over An Area and Identify Everything it can using a camera mounted on it.



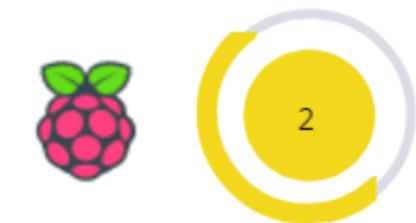
Algorithms

The Algorithms that azure will be running will be license plate recognition system, Face Detection, Speed Identification, Fire detection etc.



Output

The Drone will be equipped to perform many output operations like informing nearby medical support or raising barriers also changing traffic lights etc.



Processing

A Raspberry Pi Pocket Sized PC along with Windows IOT core or a Linux Distro will be used for Sending the images to cloud as well as running algorithms.



Cloud

Azure will be used along with Many open Source Libraries to run different Algorithms to monitor traffic.

IDENTIFICATION

Heat Sensor

To find and monitor temperature changes.

Doppler Radar

Monitoring speed of a passing vehical.

Smoke Sensor

To identify if there is a fire or not.

Distance Sensor

They can help in finding Pitholes which is a great cause of damage to cars.

Camera Feed

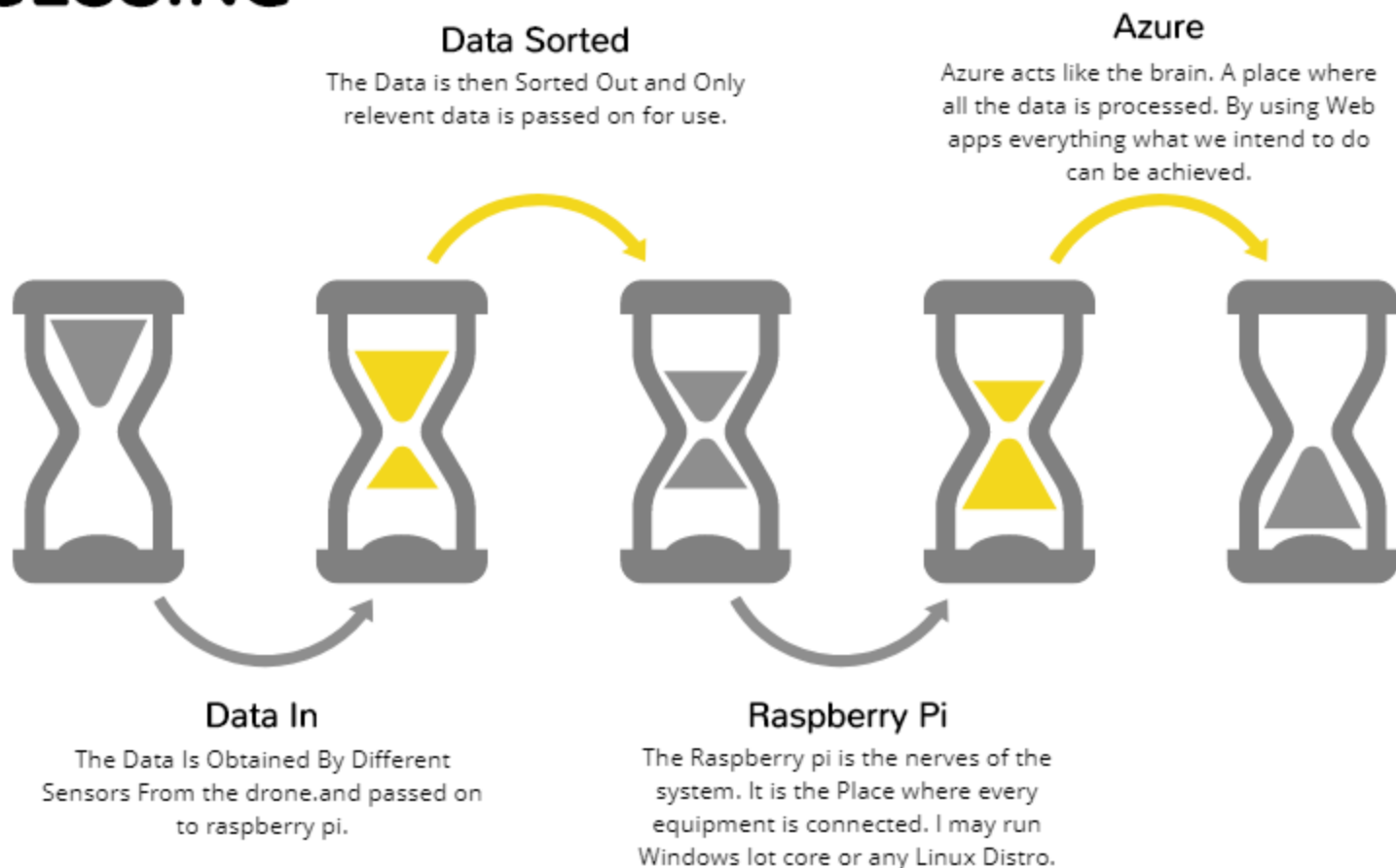
To get the images and video to run the algorithms on.

Others

A GPS, A Pressure Sensor and different things required for smooth functioning.



PROCESSING



AZURE

Since Our code runs on a cloud that is backed by Microsoft The Processing Power and Hardware is great for such kinds of codes that require continuous feed.

01

02

By using azure we can provide lots of data in very short time. A Live footage can also be shown to a controller if required.

Azure can Also add Artificial Intelligence to the drone And the drone itself can learn how to act by using different algorithms.

03



ALGORITHMS

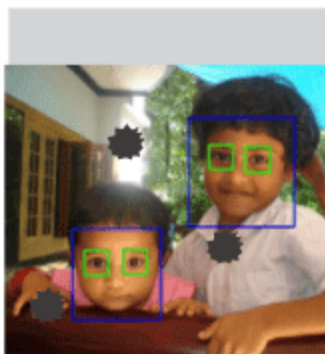
LICENSE PLATE RECOGNITION

The Drone by using OpenALPR can identify any License Plate Making it very easy to detect the owner of the car involved in crash or other happenings.



FACIAL RECOGNITION

OpenCV and Python Libraries can be used to detect faces which can easily be run in databases like Aadhar in India that stores Faces of every Indian Citizen.



SPEED AND ACCIDENTS

Various sensors shall be used in order to provide great ability to drone such as detecting speeds and also finding places where accidents can occur or have occurred.



OUTPUT



The Output Given by the drone can range from switching a traffic light to calling police and paramedics. These Outputs will be given on the spot according to the requirement of situation. The response time in case of an accident would be the time taken to travel the distance from nearest hospital to crash site. This way lots of lives can be saved. Also in case of heavy traffic warning lights could be turned on so that people who are not yet in the queue can take another route. Thus Avoiding creation of a major traffic Jam.



ACKNOWLEDGEMENTS

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Thank You!!!

