&RAKATHON 2.0 2019

Let the code pitch for you!

Team Name: Team Bee

Team Members:

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Project Name: Autonomous Traffic Control System (A.T.C.S)

Theme Involved: AI and ML

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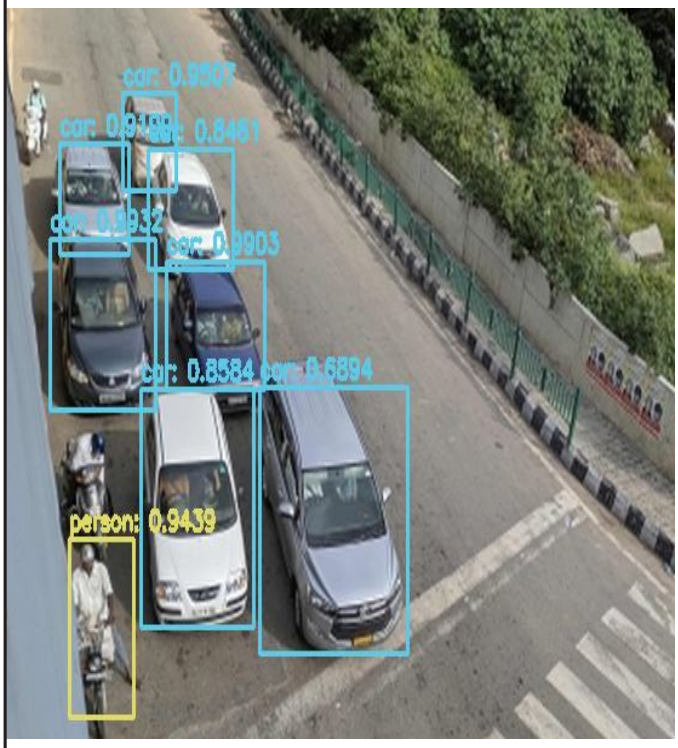
Problem we are dealing with:

We are currently living in a fast paced life with shortcuts for everything we see, use or implement in our daily lives that can not only cut down on our time and also many things like labour. Time is one thing that can't be bought and is quite the natural element in life. When it comes to Metropolitan cities, the major problem faced is Traffic Jam. According to a survey, an average Bangalorean wastes around 17 mins. average at every stop. There might be times when the traffic density at a spot might be really high and the go signal lasts only for 30s and a truck at the front just won't start. That contributes to a lot of noise pollution, and a lot of fuel lost in Ignition more than imagined. Another situation would be waiting mindlessly for a whole minute all alone at the spot, waiting for the light to turn green thereby, wasting a lot of fuel by decreasing your engine efficiency due to stopping at intervals and decreasing your mileage.

Solution:

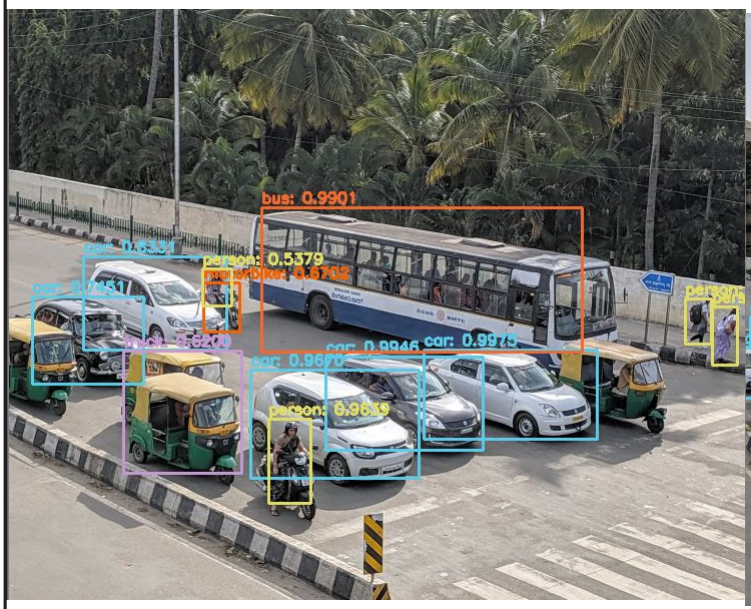
This is not one of those problems without a solution. We have devised a plan to optimize the complex problem with a very simple solution with the help of AI. The Devegowda Petrol pump station in Banashankari was taken as a specimen for further analysis.



img.1 With Higher Density

img.2 With Lower Density

As observed, in *img.1,* The number of vehicles is higher and in *img.2,* It is low. But, the factor here is, in both the situations the wait time after the signal gives a green is 30s which is optimum for *img.1* but not for *img.2.* This will increase the wait time on the next awaiting junction (*img.3)* as the vehicles in *img.2* will clear out in a matter of 10s and there will still be 20s to spare.



img.3 Other junction before filling up

img.4 Other junction completely filled up

The AI starts scanning it's assigned intersection at time of going red from green. And then, every single vehicle is scanned for and is given a unique token and time limits. The time required to pass would be calculated based on the density and is used when the green is given. So, the calculation would be based on time limits and priority given to bigger vehicles like trucks and special priority if an emergency service vehicle is detected. Here, the time would be different for each situations given as images. And the remaining time would be added to the remaining junctions.

Things we have already started to work on:

The most commonly used dataset is the “coco” dataset consisting of 80 different object identification models which includes briefcases, vases and TVs. As this is a product based on road maintenance, it will be trained over different Indian vehicles like autorickshaws and differently designed trucks including the regular models for detection. It will be extremely future-proof and will also be implemented in crime control and accident reporting for better functioning of the society. As it is based on software and very minimum hardware requirement, they are cheaper, can be easily implemented and also maintained.

Goals:

- Reduction in Carbon footprint
- Increase in KMPL/MPG
- Faster Emergency Response Rate
- Increase in Cardiovascular health
- Reduction in Time taken for travelling from point A to point B

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