

## PROBLEM STATEMENT

Traffic congestion problems consist of incremental delay, vehicle operating costs such as fuel consumption, pollution emissions and stress that result from interference among vehicles in the traffic stream, particularly as traffic volumes approach a road's capacity.

## DESIGN THINKING

This paper aims to overcome traffic congestion caused by ineffective traffic management systems that are outdated and work on a pre-defined countdown. These traditional systems allot timings irrespective of the actual density in traffic on a specific road thereby causing large red light delays. The system we propose ensures traffic lights respond to real time values of traffic, thereby allowing proper management of time and resources. In order to do this we first calculate the density of traffic which is determined using a combination of ultrasonic sensors and image processing techniques. This information is processed by a Raspberry Pi, which in turn controls the traffic light indicators. In addition to that, the data that is collected is sent to the cloud, and can be used to monitor traffic flow at periodic intervals. In case of sensor system failure, the values stored in the cloud will also be useful in predicting the density of traffic based on long term periodic analysis.