

VEHICLE SEARCHING WITH DEEP LEARNING

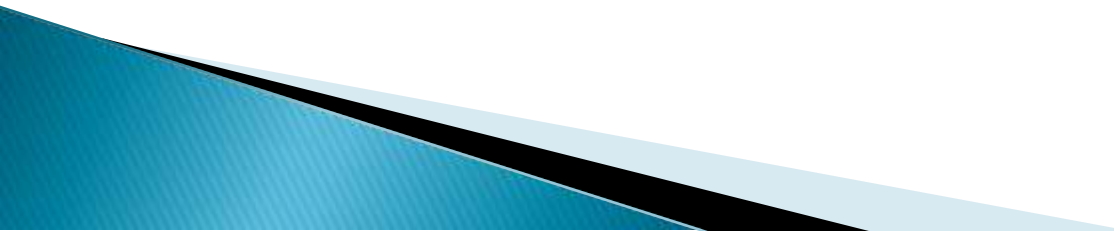
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Introduction

Vehicle Searching System deals with detecting vehicle images from traffic surveillance videos . Nowadays traffic surveillance systems are installed in almost every city to record events and traffic. This surveillance video scan be used for vehicles searching with the help of Machine Learning. The system can be used by police officials to identify outlaw's vehicle in crime. Typically, police officials manually identify the vehicles in recorded video according to vehicle's appearances. This process is time-consuming and inclined to faults due to human fatigue for long duration videos. Moreover, hiring employees is costly. But with the help of Deep Learning it is possible to make this process more simpler .In this project, with the help of image processing and computer vision the vehicles are classified mainly based on two vehicle characteristics, i.e. types and colors. This project proposes a convolutional neural network frame work to overcome the previously mentioned problems in vehicle searching in surveillance videos. CNN is a type of Deep Learning which is very well known in image recognition field. This work mainly focuses on the performance of vehicle classification modules which are vehicle type classification and vehicle color classification.

Methodology



MODULES

- ▶ Admin
 - Login
 - Add or manage police
 - Add or manage Camera
 - Assign work
 - Video upload

- ▶ Traffic police
 - Login
 - Works view
 - Works status update
 - View camera
 - View video
 - Searching

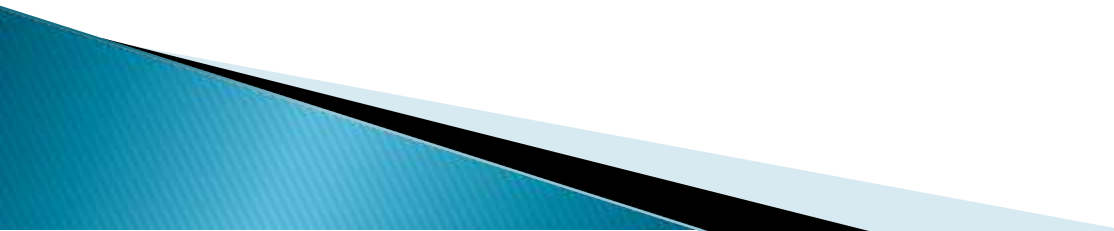
Developing Environment

SOFTWARE REQUIREMENTS

1. Operating System : Windows 8 or higher
2. Front End Tool : HTML, CSS, python
3. Back End Tool : MY SQL
4. IDE : Pycharm community, Android studio/eclipse
5. Web Browser : All new browsers

HARDWARE REQUIREMENTS

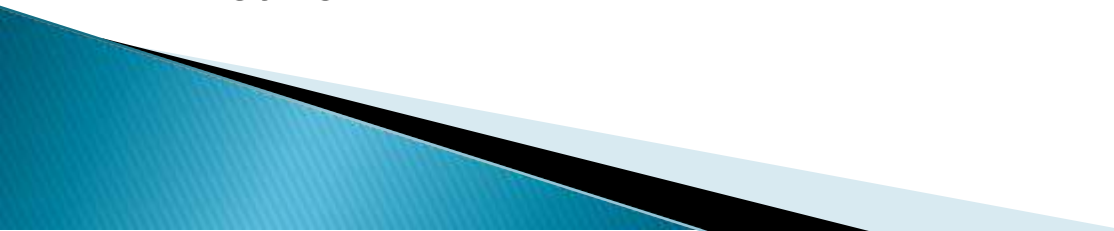
Processor : Intel Pentium IV
Monitor : Min. 14
RAM : 256 MB
Hard Disk : 80 GB
Keyboard : Standard 104 Keys
Modem : 56 Kbps
Mouse : Serial mouse



Algorithm Used

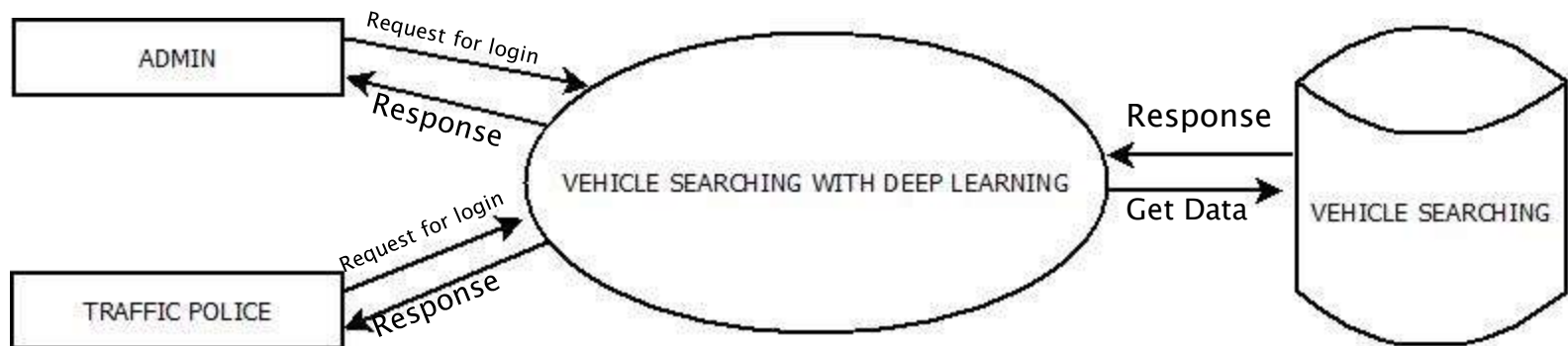
Convolutional Neural Network

Convolutional Neural Network is a kind of feed forward artificial neural network, it is quite similar to standard neural network. The neurons in the network have learnable weights and biases. Every neuron receives inputs and performs some operations. There are three major layers in CNN, i.e. convolution layer, pooling layer, and fully connected layer. Convolution layer will calculate the output of neurons that are connected to local regions within the input, each computes a dot product between the weights and biases. Pooling layer is used in order to reduce the feature maps' size. It means that the parameters will be reduced too, the computation time is then faster. In general, max pooling is used in CNN. In fully connected layer, each neuron in this layer is connected to previous layer neurons. The layers are fully connected in the same manner as in a common neural network.

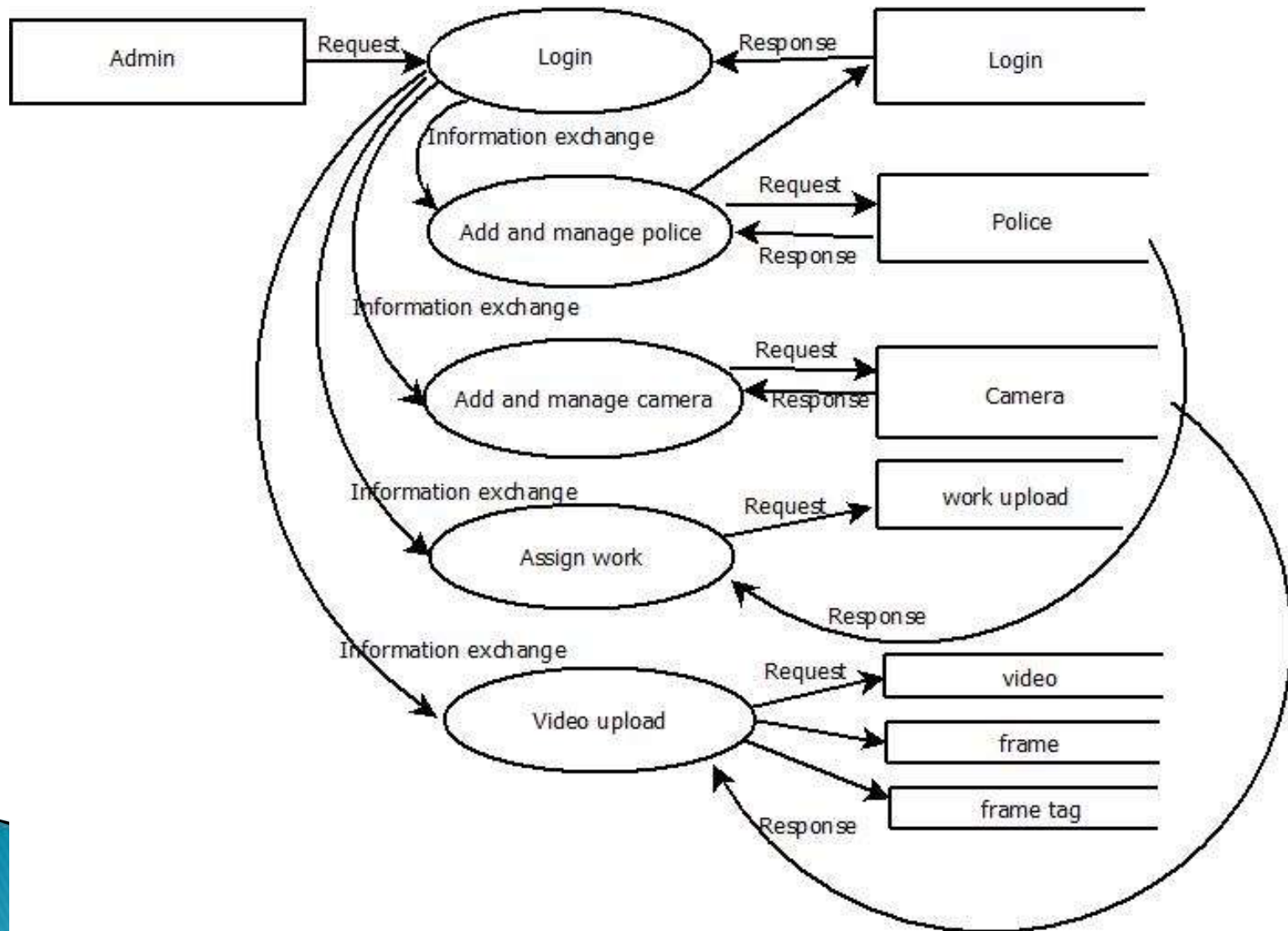


DATA FLOW DAIGRAM

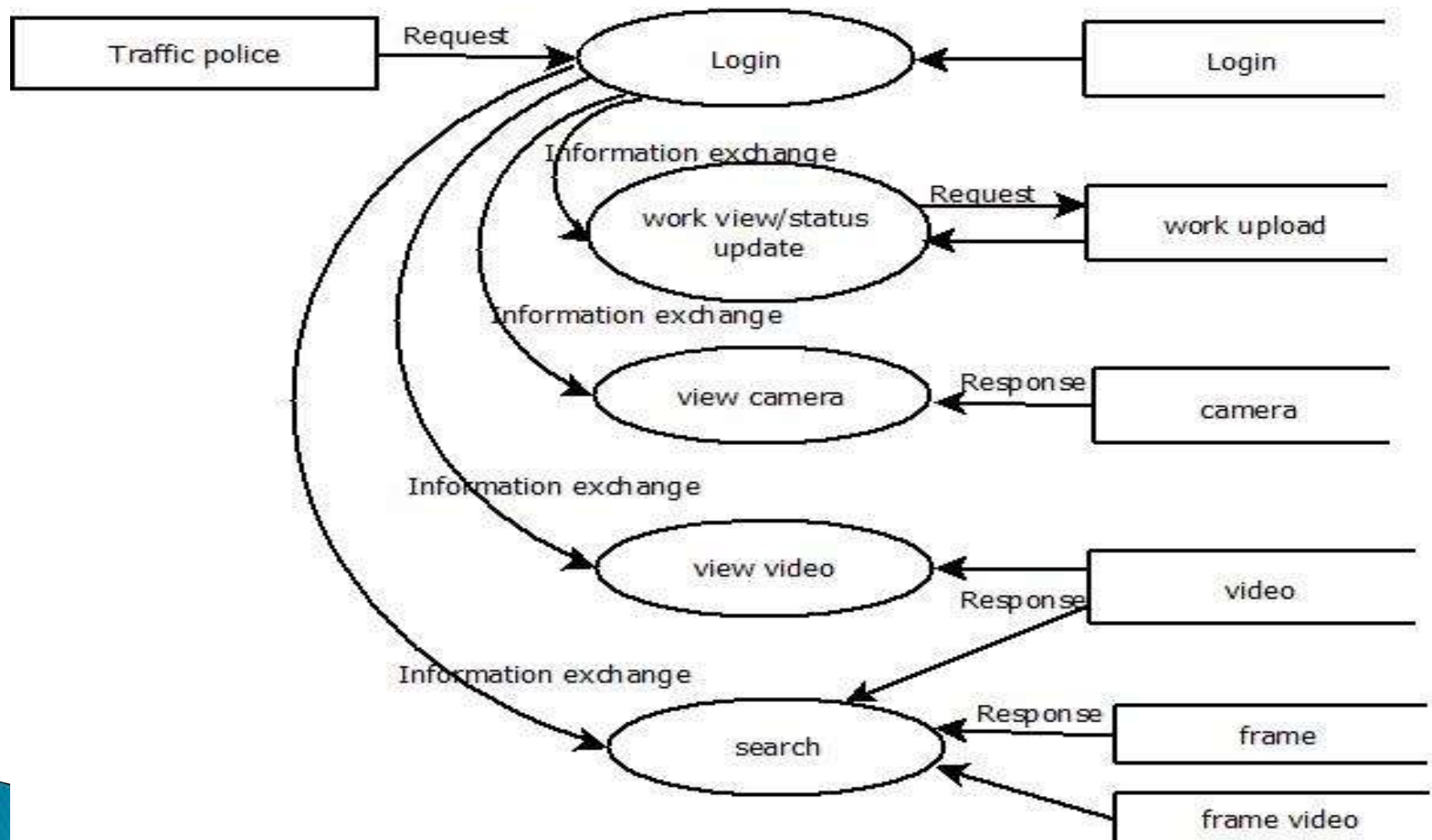
Level 0



Level 1.1



Level 1.2



PROJECT PLAN

User Story ID	Task Name	Start Date	End Date	Hours	Status
1	Sprint 1	20-04-2022	01-05-2022	18	Completed
2		04-05-2022	12-05-2022		Completed
3	Sprint 2	15-05-2022	25-05-2022	11	Completed
4		26-05-2022	29-05-2022		Completed
5	Sprint 3	30-05-2022	02-06-2022	5	Completed
6		03-06-2022	05-06-2022		completed
7	Sprint 4	06-06-2022	20-06-2022	11	Completed
8	Sprint 5	20-06-2022	24-06-2022	8	Completed
9		25-06-2022	29-06-2022		completed

USER STORY

User Story ID	As a<Type of User>	I Want to<Perform Some Task>	So that I can <Achieve some Goal>
1	Admin	Login	Login successful with correct username and password
2	Admin	Add and manage police	Add and manage police information
3	Admin	Manage camera	Add and manage camera information on different location
4	Admin	Assign work	Assign to work police
5	Admin	Video upload	Upload video based on camera
6	Traffic police	Login	Login successful with correct username and password
7	Traffic police	Works view and status update	View allocated works from admin and updated works status
8	Traffic police	View camera	View camera information
9	Traffic police	View video	View video
10	Traffic police	Searching	Search vehicle from video

PRODUCT BACKLOG

User Story ID	Priority <High/Medium/Low >	Size (Hours)	Sprint <#>	Status <Planned/In progress/Completed >	Release Date	Release Goal
1	Medium	8	1	Completed	01-05-2022	Table design
2	High	10		Completed	12-05-2022	Form design
4	Medium	6	2	Completed	25-05-2022	Basic coding
5	High	5		Completed	29-05-2022	Login successful with correct username and password
6	High	3	3	Completed	02-06-2022	Add and manage police information
7	high	2		Completed	05-06-2022	Dataset training
8	High	11	5	Completed	20-06-2022	Camera application and frame capture
9	Medium	4		Completed	24-06-2022	View camera information
10	Medium	4		Completed	29-06-2022	Search vehicle from video

SPRINT PLAN

[illegible]

SPRINT ACTUAL

[illegible]

Thank you

