AvidBeam

AvidBeam AvidAuto Product Specifications

Contents

List Of Abbreviations

LPR	License plate recognition
ATUN	AvidBeam scalable video processing and computer vision product
ADAS	Automatic driver assistant system

Introduction

AvidBeam Technologies is specialized in video processing, computer vision, and video analytics products and technologies. This document describes AvidBeam AvidAuto product which is intended for traffic and parking market. The document highlights the main features of AvidAuto, the hardware and software requirements, configuration and integration of AvidAuto with cameras and/or other VMSs, extension of AvidAuto to support new functionalities, and usage example.

Related AvidBeam Products

AvidAuto is fully integrated with AvidBeam ATUN platform for scalability purposes. ATUN is a platform for scalable video processing using different plugins where each plugin can perform a dedicated computer vision or video processing functionalities. ATUN includes many other built-in features such as database management, result visualization, result filtering and query support. Those features facilitate development effort and time for other applications.

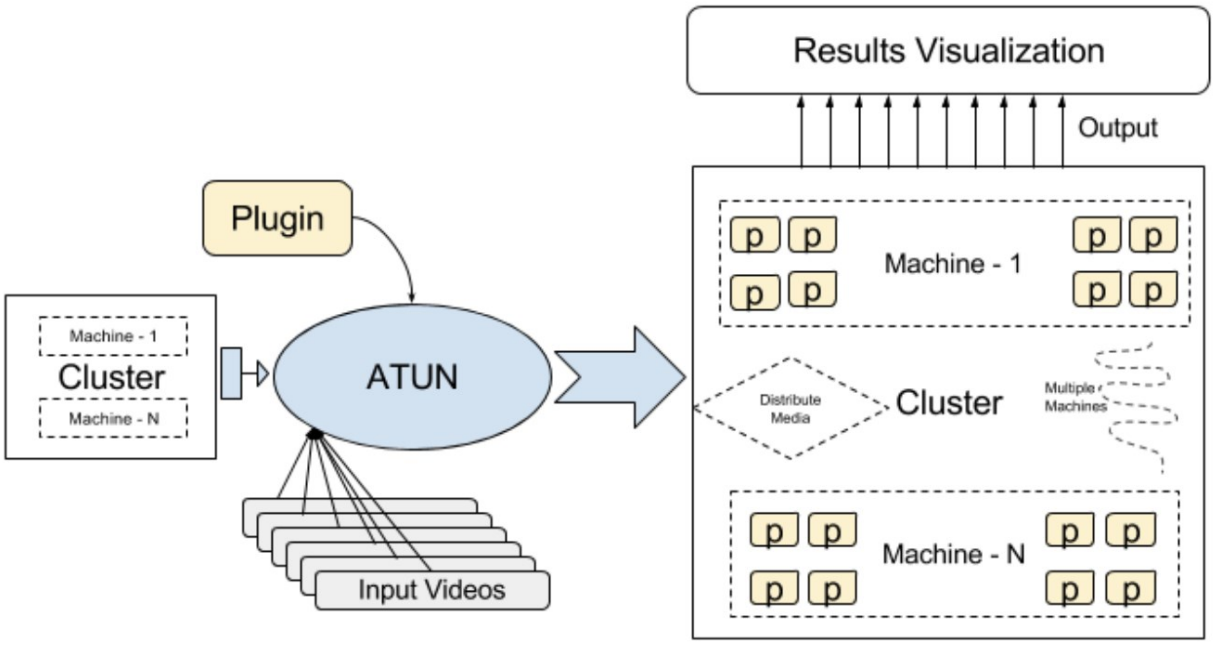

Figure 1 AvidBeam ATUN

ATUN provides easy API for applications like AvidAuto which can be used to extend ATUN UI by adding customized UI, customized processing plugin, or both as shown in Figure 2.

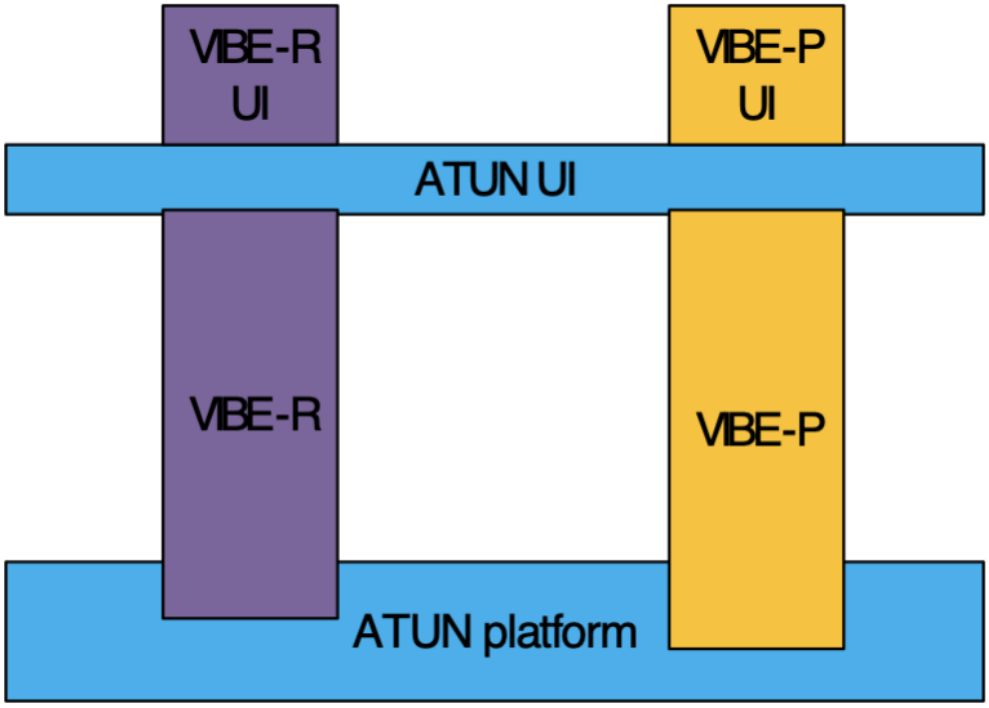

Figure 2 Relationship between ATUN and ViBEs

In addition to AvidAuto, there are other ATUN-powered products of ViBEs (ViBE-VS, ViBE-R, ViBE-S, ViBE-A). All ViBEs share ATUN but they use different plugins, have different web interfaces, and target different industries as follows

- AvidAuto: targets parking solution and include features for car detection, car counting, automatic license plate detection, etc.
- ViBE-VS: a video summarization product. It is used to summarize a long video and produce a brief meaningful video with all important details merged in smaller number of frames.
- ViBE-R: targets Malls and retail stores and includes features for pedestrian detection and counting, crowd analysis using hot spots and heat maps, pathways, etc.
- ViBE-S: targets security applications and include features such as intruder detection, abandoned luggage detection, object detection, etc.
- ViBE-A: Target ADAS solution and include features for various object detection, and classifications. ViBE-A will be described in great details in this document.

AvidAuto can be installed on a private or public cloud where it can manage many cameras simultaneously.

AvidAuto Features

The main features of AvidAuto can be summarized as follows

- Egyptian license plate recognition: automatically detect and recognize default Egyptian license plates (LPR)
- Car detection
- Car counting
- Input from camera stream(s)
- Input from video file(s)
- Scalability: AvidAuto is a scalable product that interacts with many camera feeds or live stream
- Parallel execution for high performance: AvidAuto can be used to analyze video streams simultaneously and store the corresponding object details in a database.
- Web interfaces for result viewing, statistics, and query support
- Customizable: AvidAuto can be easily extended by adding new pluggable modules for different functionality, extending existing modules, or extended web interface functionality.

AvidAuto Operation

Figure 3 shows the main processing cycle of AvidAuto.

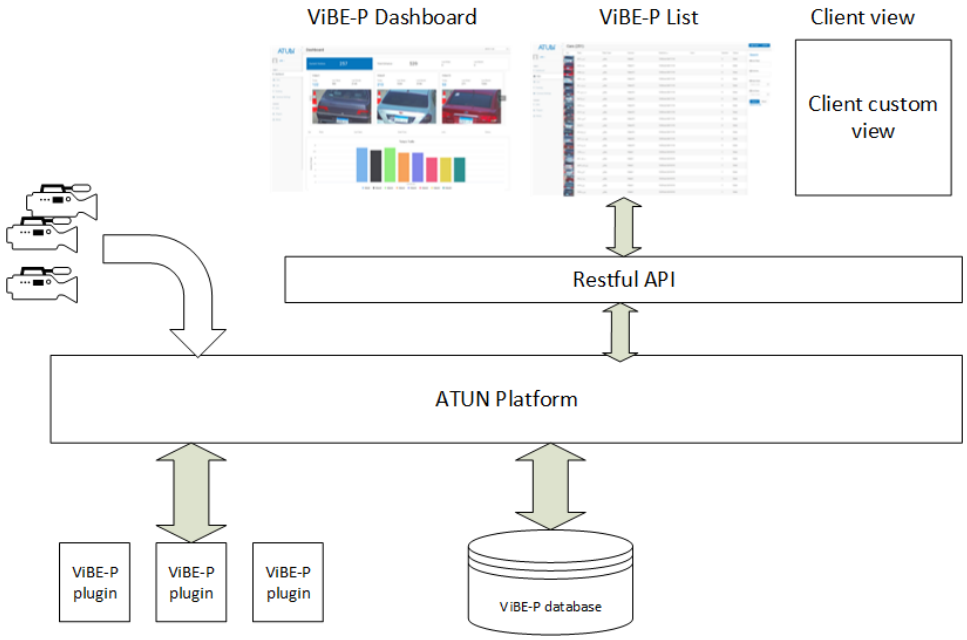

Figure 3 AvidAuto Data Processing

The sequence of processing can be described as follows

1. Connected camera stream(s) data are managed by ATUN and passed to AvidAuto for LPR.
2. LPR recognition results are stored in database.
3. Dashboard is automatically updated with latest results such as updated car count and the image of last car detect/recognized per camera.

The details of each operation of AvidAuto is described in the following subsections

Device Configuration

Once AVIDAUTO is installed, it needs to be configured for existing hardware (cameras and physical processing machines). This hardware configurations is performed only once and can later be updated whenever necessary due to hardware changes.

Data Processing and Job Configuration:

For any new input data to be processed, a dedicated job need to be defined. This job should include

- Input data source (camera or file)
- Used plugin(s)
- Used hardware resources

Multiple jobs can be executed in parallel based on the capacity of the available hardware. Once a job is created, it can be monitored from the configuration view, the results of executed any job will be saved in a specific database which can be accessed later for visualization.

AvidAuto Web Interface Views

AvidAuto has several web interfaces and views. In addition to this, custom user views can be added and integrated with AvidAuto using Rest API. This section describes the defaults views that are available upon installing AvidAuto.

1. Dashboard View:

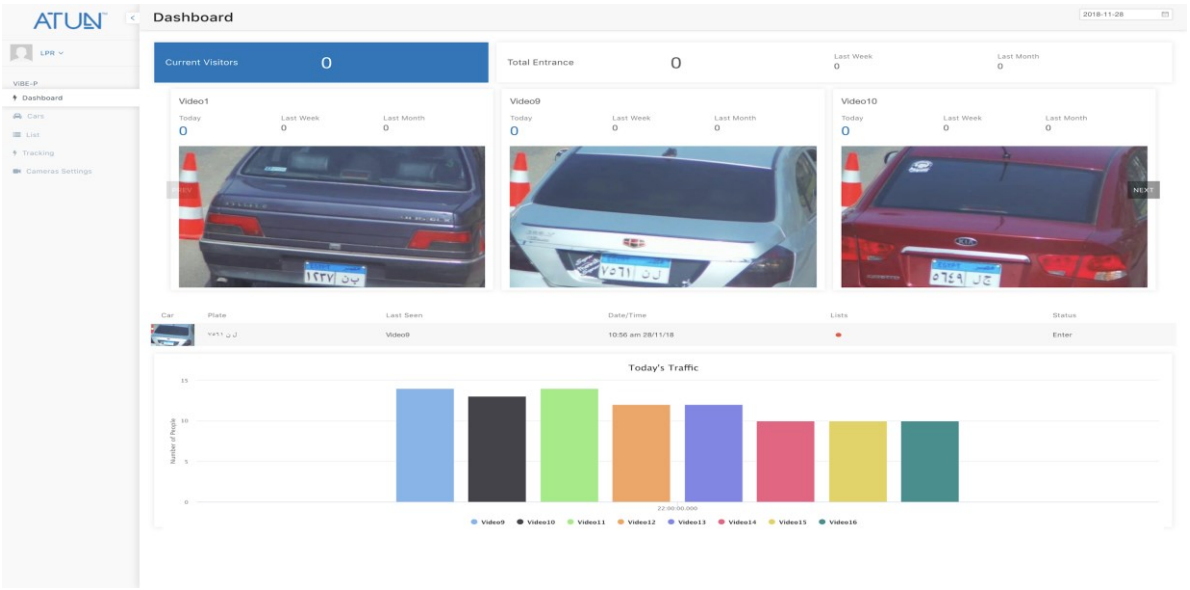

Figure 4 AvidAuto Dashboard View

The Dashboard view provides a daily summary for the entire solution divided among small components or cards listed below

- Count Visitors Card that gives brief about the number of visitors currently in the area covered with AvidAuto solution as shown in figure 5

Figure 5 Count Visitors Card

- Total Entrance Card that shows how many plates entered today, compared to last week and last month as shown in figure 6

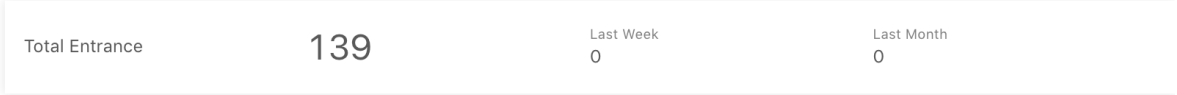

Figure 6 Total Entrance Card

- Camera Cards that presents the image for last detected plate for live feed with details numbers for total amount of plates

detected from this camera compared to last week and last month as shown figure 7

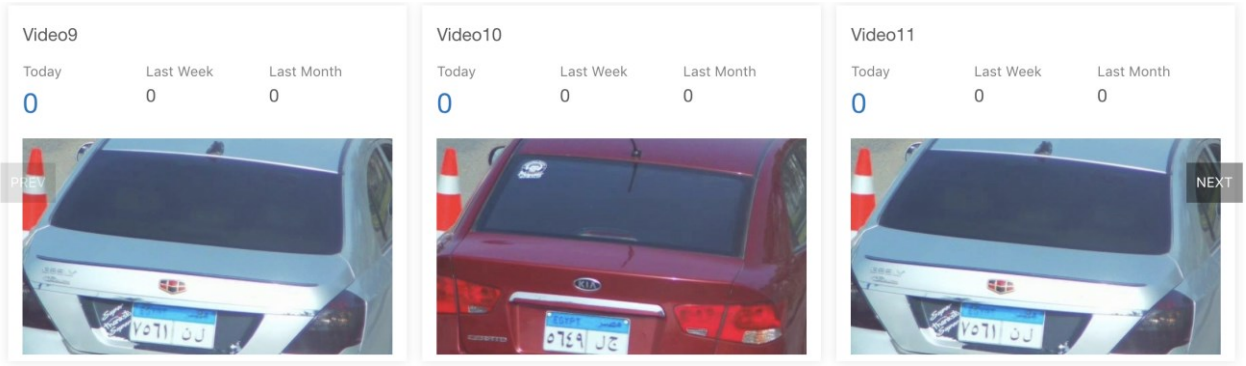

Figure 7 Cameras Slider Card

- Tracking table Card that track the predefined plates in the List View as shown in figure 8

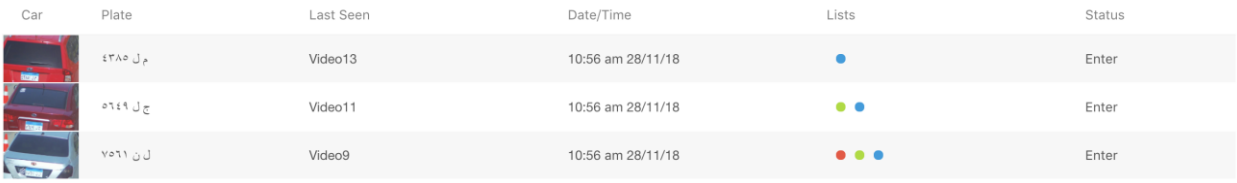

Figure 8 Tracking Table Card

- Graph Card that represents a 24 hours summary for the whole day flow starting from 12 am till 11:59 pm as shown in figure 9

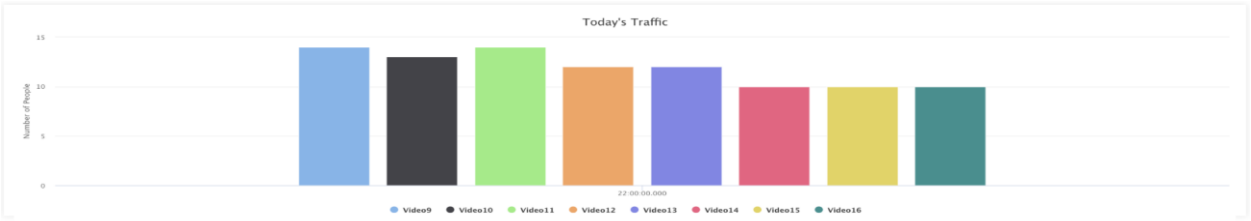

Figure 9 Graph Card

2. Cars View:

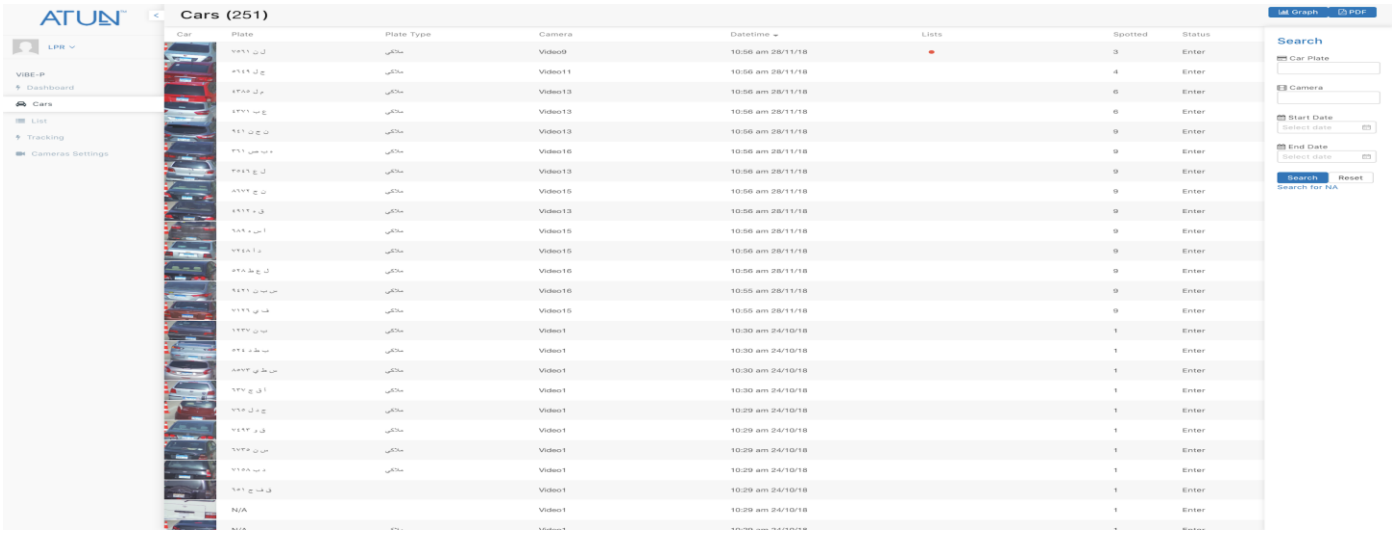

Figure 10 AvidAuto Cars View

The LPR results are displayed in timed order in the car view as shown in Figure 10 and provides multiple features for the user listed below

- Filter results per camera , plate-type, duration as shown in figure 11
- Search By plate or by numbers or by letters as shown in figure 11

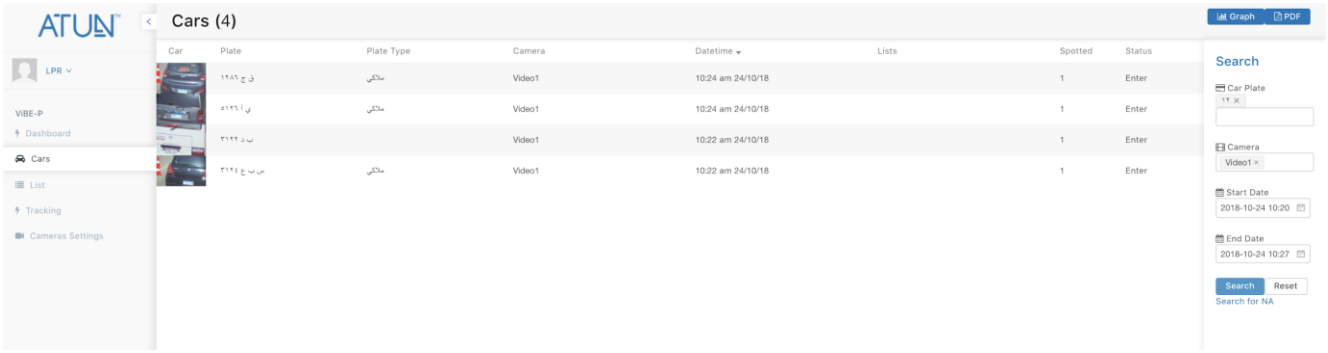

Figure 11 AvidAuto Cars View with Filtered Data

- Generate PDF Report For the Filtered Data

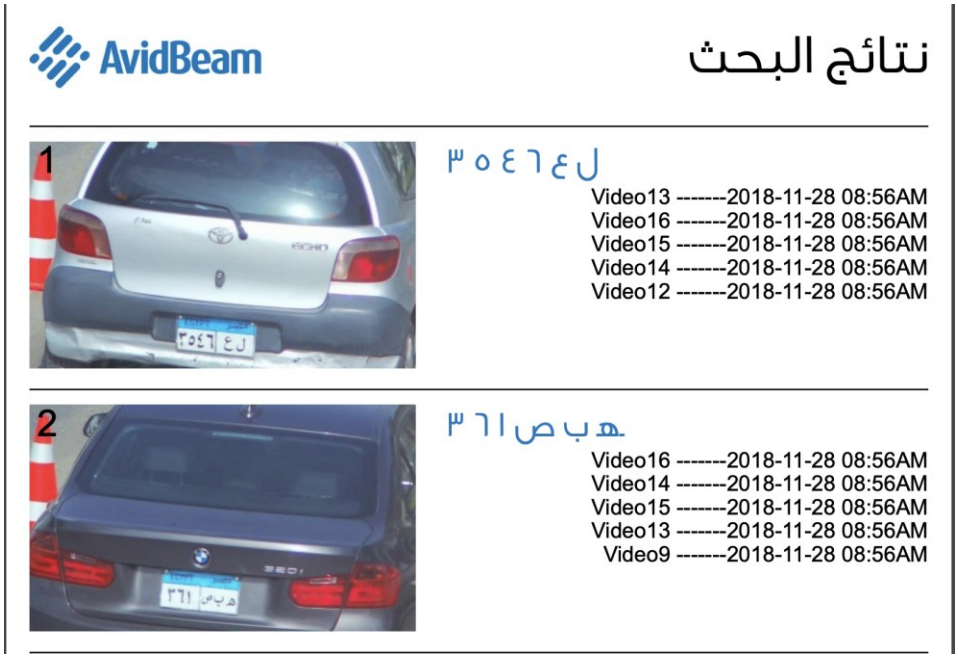

Figure 12 AvidAuto Report With Detailed Records for Each Plate

- Show statistics and analysis across all the results shown divided Among all cameras configured as shown in Figure 13

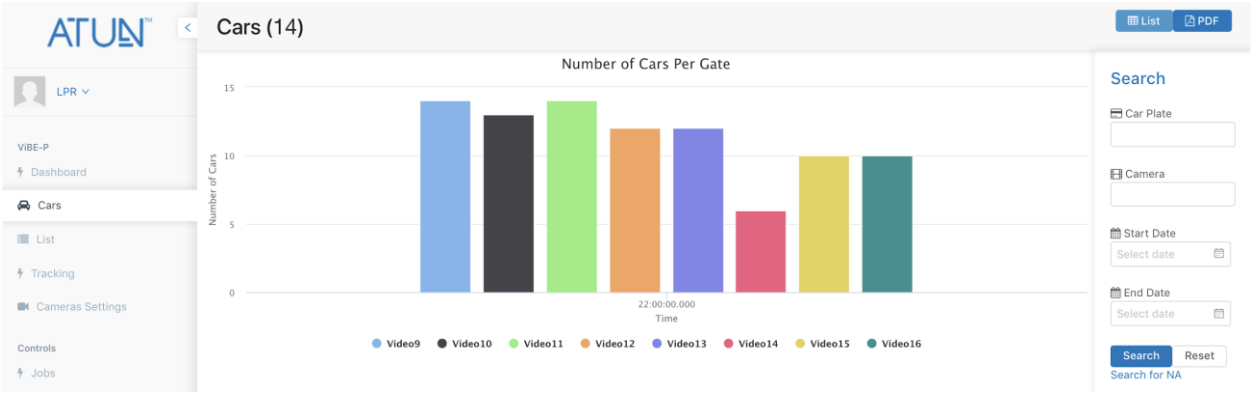

Figure 13 AvidAuto Graph To show the number of plates across a period of time

- Show Plate Details And History by Clicking on Any Record as shown in Figure 14

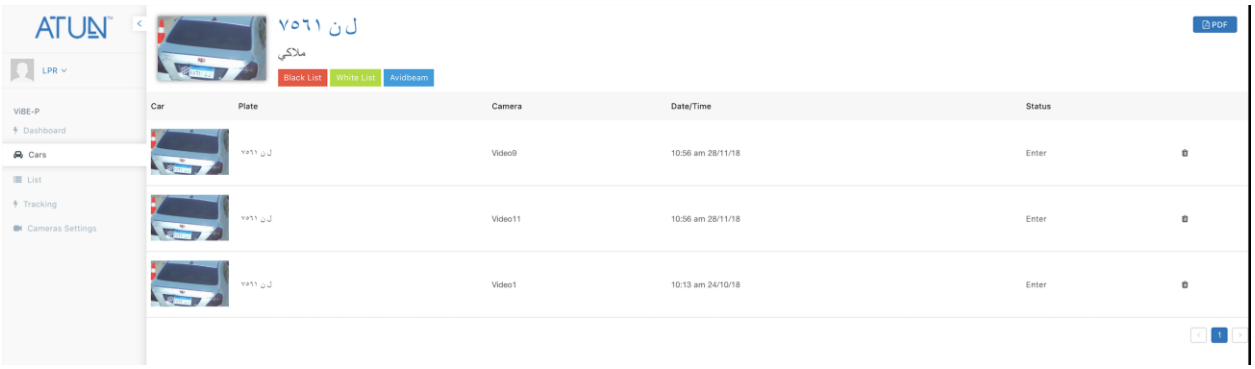

Figure 14 AvidAuto Plate Details View

- Generate PDF Report For a Certain Plate Detail as shown in Figure 15

Figure 15 AvidAuto Plate Details Report

3. List View:

The List View is mainly where the user can add multiple plates to an existing or new created list. By default, there are two existing lists, black and white lists, or new created list like the Avidbeam List show below in figure 16, used for multiple scenarios:

Figure 16 AvidAuto List View Newly Created list for Avidbeam ‘s employees

1. Add Stolen Plates to The Black List
2. Give gate access to Certain Plates in the White List or any other created list
3. Smart City concept where you could identify plates that enter the campus on daily bases through defining new lists and adding plates to them.

A user can set all the previously mentioned scenarios with the below user cases

- Add plate to any predefined or newly created list as shown in figure 16
- Track List by color codes as shown in figure 17 & 18

Figure 17 AvidAuto List View Where you can Choose a certain color to identify this car.

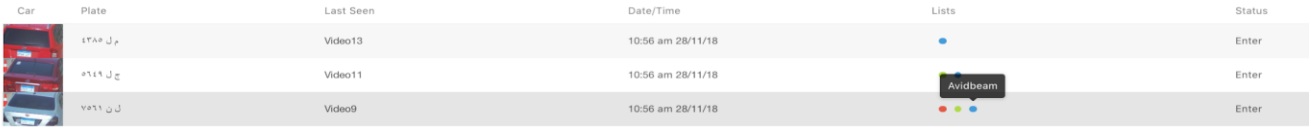

Figure 18 AvidAuto Dashboard View Tracking Card which shows the plates you add to the list with the color code the represent each list.

4. Tracking View:

The Tracking View is a table to track all the predefined plates in the list View as shown in figure 19.

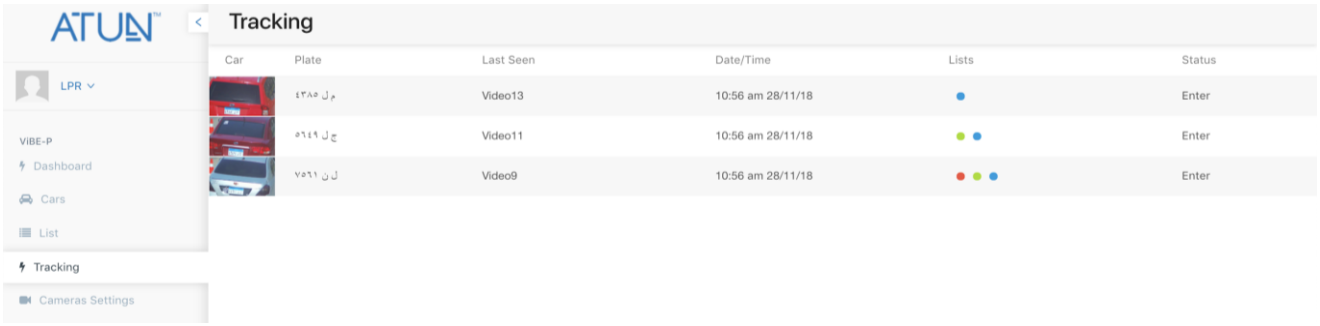

Figure 19 AvidAuto Tracking View

Processing Requirements

The hardware at which AvidAuto runs must be supported by AvidBeam releases. Currently, AvidAuto is supported only under Ubuntu. AVIDAUTO runs on top of ATUN to provide the necessary scalability.
ViBE processing requirements varies according to many factors

- Operating environment: native vs virtual
- Number of cameras connected to AvidAuto
- Camera configurations such as resolution, frame rate, compression type (H.265, H.264, MJPG, etc.)
- Hardware configuration (Processor architecture, memory, and storage)

AvidAuto Licensing

AvidAuto is an AvidBeam product and a license agreement with AvidBeam must be signed before the client can install AvidAuto in their data center. The license is usually based on certain aspects such as the maximum size of data input, number of simultaneous running instances, plugin included in the installation.

Upon product purchase, AvidBeam will provide system administrator with a user account. System administrator will need to login to AvidBeam's licensing server using the credentials offered to retrieve their assigned product key. System admins will then need to follow the steps mentioned in the license activation document to activate their version of ATUN with AvidAuto.

AvidAuto Installation & Licensing

AvidAuto can be installed using native machine installation or using a dedicated virtual machine. AvidAuto comes with a friendly installation script. A complete description of the installation process is available in a separate document (ATUN Installation Guide).

Extending AvidAuto Functionality

There are several approaches that can be used to extend AvidAuto functionality and add new un-supported features in the provided release. These approaches can be summarized as follows

1. Plugin Upgrade: communicate new required feature to plugin owner which could be AvidBeam Technologies, AvidAuto client who license this product from AvidBeam Technologies, or other 3rd party company who deliver the used plugin

2. Creating a new plugin: Using AvidBeam ATUN SDK, client can develop their own plugin and integrate it with AvidAuto. A license from AvidBeam may be needed to enable the new plugin to run with AvidAuto

References

1. AvidBeam ATUN product. Available through AvidBeam
2. AvidBeam Online Demo. Available on YouTube AvidBeam channel.