WE CLAIM:

1. A system for selection of candidate video frames from a traffic video comprising

an imaging processor operatively connected to a traffic video source including a traffic surveillance camera or an image grabber with decoder module;

said imaging processor receives the traffic video from said source for selection of candidate video frames from the received traffic video for analysis of an entire traffic video stream to extract vehicles details therefrom including detection of situations of moving vehicles and non-moving vehicles;

said traffic video is forwarded to the imaging processor from the source at an appropriate rate suitable for said candidate frames selection computation whereby image capturing rate of the traffic video source is changed by the imaging processor as per the traffic video forwarding rate; wherein the imaging processor comprises

an FPS calculator to receive the traffic video from the source and forwarding the video frames of said received traffic video at a selected frame per second (FPS) and with a selected region of importance (ROI) for each forwarded video frame;

a motion region detector to receive the forwarded video frames and analyzes each forwarded frame to determine whether the received video frames correspond to no-motion frames or motion frames;

a motion frame processing module operatively interfaced with the motion region detector to receive the motion frames with marked ROI for further processing and accordingly discarding irrelevant motion frames to reduce a computational overloading situation; and

a no-motion frame processing module operatively interfaced with the motion region detector to receive the no-motion frames for distinguishing the no-motion frames whether corresponding to no-vehicle or non-moving vehicle and

discarding only the no-motion frames corresponding to the no-vehicle from the vehicles details extracting analysis.

2. The system as claimed in claim 1, wherein the FPS calculator is adapted to select the FPS and the ROI based on computational load during candidate frames selection including adaptively selecting smaller ROI than the whole image for each of the video frames being forwarded and/or reducing the FPS adaptively to reduce the computational load.

3. The system as claimed in claim 1, wherein the FPS calculator enables FPS control by involving a FPS control unit to enable FPS control whereby target FPS suitable for the computational load determined by the FPS calculator is communicated to the FPS control unit which is operatively interfaced to the traffic surveillance camera or image grabber and decoder module to change image capturing rate as per the target FPS and forward the video to the FPS calculator as per the target FPS.

4. The system as claimed in claim 2, wherein the FPS calculator is configured to continuously measure the computation load based on current FPS of the video frames and time taken to process the video frames during any prefixed duration of time, wherein for total time taken to process the video frames is more than difference in timestamp between last frame and first frame in said time duration, the FPS calculator infers overload condition with exiting ROI and existing FPS.

5. The system as claimed in claim 4, wherein the FPS calculator reduces the ROI by a fixed amount and/or the FPS by similar percentage in the overload condition thus enabling processing of fewer video frames per second with reduced ROI to reduce the computational load and when the total time required to process all the

video frames during a certain interval of time is much less than the difference in timestamp between the last frame and the first frame during that time duration, it increases the ROI and FPS.

6. The system as claimed in claim 1, wherein the motion region detector identifies the motion regions for the frames in compressed domain involving frame differencing method between two consecutive frames applying connected component analysis and spatial position constraint to discard certain connected components based on their positions in field of view (FOV).

7. The system as claimed in claim 1, wherein the motion frame processing module includes

an Interestedness (Ir) measure calculator to receive the motion frames with marked ROI and calculate Ir value involving characteristics of the video frames and their application including edge characteristic, vehicle position in the FOV; and

a frame selector module to decide which frames to be discarded and which frames to be processed further based on the Ir value.

8. The system as claimed in claim 1, wherein the no-motion frame processing module distinguishes the no-motion frames whether corresponding to no-vehicle or non-moving vehicle in the FOV based on edge concentration.

9. The system as claimed in claim 8, wherein the no-motion frame processing module sends frame block signal (FBS) information to FPS control unit for the FPS control including reducing or stopping the image capturing upon detection of no vehicle present in the FOV.

10. The system as claimed in claim 8, wherein the no-motion frame processing module distinguishes the no-motion frames whether corresponding to no-vehicle or non-moving vehicle in the FOV including

checking number of consecutive no-motion frames with respect to a previously set no-motion frame counter threshold;

passing the no-motion frames to edge density based non-moving vehicle presence detection module for further analysis if the number of consecutive no-motion frames is reached to the previously set no-motion frame counter threshold, otherwise the no-motion frames are discarded from further processing;

checking edge-density of the frames in the edge-density based non-moving vehicle presence detection module to determine whether there exists any non-moving vehicle in the FOV and discarding the frames from further processing which do not corresponds to any non-moving vehicle in the FOV while rest of the frames are passed to further analysis.

11. A method for selecting candidate video frames from traffic video involving the system as claimed in the claim 1, comprising

receiving the traffic video from the traffic video source in the imaging processor;

selecting the candidate video frames from the received traffic video in the imaging processor for analysis of the entire traffic video stream to extract vehicles details from therefrom including detection of situations of moving vehicles and non-moving vehicles; and

controlling the traffic video forwarded to the imaging processor from the source at an appropriate rate suitable for the candidate frames selection computation.

12. The method as claimed in claim 11, wherein selection of the candidate video frames from the received traffic video in the imaging processor for analysis of the entire traffic video stream to extract vehicles details therefrom including detection of situations of moving vehicles and non-moving vehicles comprises the steps of

receiving the traffic video from the source in a FPS calculator and forwarding the video frames of said received traffic video at a selected frame per second (FPS) and with a selected region of importance (ROI) for each forwarding video frame;

receiving the forwarded video frames in a motion region detector and analyzing each forwarded frame to determine whether the received video frames correspond to no-motion frames or motion frames;

involving a motion frame processing module operatively interfaced with the motion region detector to receive the motion frames with marked ROI for further processing and accordingly discarding irrelevant motion frames to reduce computational overloading situation;

involving a no-motion frame processing module operatively interfaced with the motion region detector to receive the no-motion frames for distinguishing the no-motion frames whether corresponding to no-vehicle or non-moving vehicle and discarding only the no-motion frames corresponding to the no-vehicle from the vehicles details extracting analysis; and

enabling a FPS control by involving the FPS control unit whereby target FPS suitable for the computational load determined by the FPS calculator is communicated to the FPS control unit which is operatively interfaced to the source to change image/video capturing rate of the source as per the target FPS and forward the video to the FPS calculator as per the target FPS.