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**ABSTRACT**

Traffic is the major problem which every country faces because of the increase in number of vehicles throughout the world, particularly in large urban areas. As the problem of urban traffic congestion spreads and occurrence of road accidents increase, there is a pressing need for the introduction of advanced technology and equipment to improve the traffic control algorithms to better accommodate this increasing demand. The simplest way for controlling a traffic light is using timer for each phase. Another way is to use electronic sensors in order to detect vehicles, and produce signal that cycles. In this system we propose the design for controlling the traffic lights based on time interval. This system control the time interval of the traffic light based on traffic density system for controlling the traffic light by image processing. This system will detect vehicles through images instead of using electronic sensors embedded in the pavement. A camera will be installed alongside the traffic light. It will capture image sequences. The image sequence will then be analyzed using digital image processing for vehicle detection, and according to traffic conditions on the road, traffic light can be controlled.

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**LIST OF ABBREVIATIONS**

|  |  |  |
| --- | --- | --- |
| ATSC | **=** | Adaptive Traffic Signal Control |
| FHWA | **=** | Federal Highway Administration |
| OpenCV | **=** | Open Source Computer Vision |
| YOLOv3 | **=** | You Only Look Once Version 3 |
| OCR | **=** | Optical Character Recognition |
| RGB | **=** | Red ,Green Blue |
| BSD | **=** | Berkeley Software Distribution |
| 3D | **=** | Three Dimensional |
| CPU | **=** | Central Processing Unit |
| TCB | **=** | Thread Control Block |
| TID | **=** | Thread Identifier |
| OS | **=** | Operating System |
| PCB | **=** | Process Control Block |
| I/O | **=** | Input/ Output |
| CCTV | **=** | Closed-circuit Television |
| CUDA | **=** | Compute Unified Device Architecture |
| GPU | **=** | Graphic Processing Unit |
| MacOS | **=** | Macintosh Operating System |
| LED | **=** | Light Emitting Diode |
| USB | **=** | Universal Serial Bus |
| IDE | **=** | Integrated Development Environment |
| MAC | **=** | Media Access Control |
| PHY | **=** | Physical layer |
| IP | **=** | Internet Protocol |
| VoIP | **=** | Voice over Internet Protocol |
| TCP | **=** | Transmission Control Protocol |
| UDP | **=** | User Datagram Protocol |

|  |  |  |
| --- | --- | --- |
| Mbps | **=** | Mega bit per seconds |
| LAN | **=** | Local Area Network |
| MAN | **=** | Metropolitan Area Network |
| WAN | **=** | Wide Area Network |
| TV | **=** | Television |
| ISP | **=** | Internet Service Provider |
| DSL | **=** | Digital Subscriber Line |
| RIP | **=** | Routing Information Protocol |
| WiFi | **=** | Wireless Fidelity |
| RDBMS | **=** | Relational Database Management System |
| SQL | **=** | Structured Query Language |
| FPS | **=** | Frame Per Seconds |
| mAP | **=** | Mean Average Precision |
| COCO | **=** | Common Objects in Context |
| Test-dev | **=** | Testing Developing |
| DPM | **=** | Data Protection Management |
| R-CNN | **=** | Region Convoluation Neural Network |
| IOU | **=** | Intersection Over Union |
| PCU | **=** | Passenger Car Unit |
| MHz | **=** | Mega Hertz |
| DC | **=** | Direct Current |
| KB | **=** | Kilo Byte |
| EEPROM | **=** | Electrically Erasable Programmable Read-Only Memory |
| LCD | **=** | Liquid Crystal Display |
| NPN | **=** | Negative Positive Negative |
| PNP | **=** | Positive Negative Positive |
| *IB* | **=** | Base Current |
| *Ic* | **=** | Collector current |
| VCE | **=** | Collector Voltage |
| VB  RTP  Hz  Ah  Wh  MOSFET  GTX  CUDNN  ODBC  MATLAB  VIP  DHCP  FPGA | **=**  **=**  **=**  **=**  **=**  **=**  **=**  **=**  **=**  **=**  **=**  **=**  **=** | Forward bias  Real-Time Transport Protocol  Hertz  Ampere Hour  Watt Hour  Metal-oxide semiconductor field-effect transistor  Nvidia GeForce Graphic  Nvidia CUDA Deep Neural Network Library  Open Database Connectivity  Matrix Laboratory  Vision’s Long Range  Dynamic Host Configuration Protocol  Field Programmable Gates Array |