Design and Implementation of Density Based Traffic Control System



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Declaration

This is to certify that the project titled "Design and Implementation of Density Based Traffic Control System" is the result of our study in partial fulfillment of the B.Sc. Engineering degree under the supervision of Shithi Dev, Lecturer, Department of Electrical and Electronic Engineering, Sonargaon University, Bangladesh. It is also hereby declared that this project or any part of it has not been submitted elsewhere for the award of any degree.

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This is to clarify that the following students worked on this research and project designated “Design and Implementation of Density Based Traffic Control System" under my direct supervision in the laboratories of the Department of Electrical and Electronic Engineering, Faculty of Engineering, Sonargaon University, in partial fulfillment of the requirements for the degree of Bachelor of Science in Electrical and Electronic Engineering.

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ABSTRACT

Traffic congestion is a severe problem in many major cities across the world and it has become a nightmare for the people in these cities. Traffic can be controlled in several main junctions by incorporating either automatic traffic light control or traffic police. Conventional traffic light system is based on fixed time concept allotted to each side of the junction which cannot to be varied as per varying traffic density. At some times, priority of traffic light needs to be changed based on number of vehicles moving on road, and emergency vehicles like fire brigades, very important person vehicles and ambulance vehicles etc. We propose to design and develop a density-based traffic signal system. The signal changes automatically on sensing the traffic density at the junction. The prototype model including Infrared sensors and Arduino, which helps to overcome the limitations of traffic congestion over time-based traffic control system.

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LIST OF ABBREVIATIONS

A	Ampere
AC	Alternative Current
AFH	Adaptive Frequency Hopping
C	Capacitance
CDI	Capacitor Discharge Ignition
CMOS	Complementary Metal Oxide Semiconductor
CT	Current Transformer
DC	Direct Current
EDR	Enhance Data Rate
EEPROM	Electrically Erasable Programmable Read-Only Memory
EN	Enable
F	Farad
FTDI	Future Technology Devices International
GHz	Giga Harz
GND	Ground
GSM	Global System for Mobile Communication
IC	Integrated Circuit
I/O	Input Output
IRLED	Infrared Light Emitting Diode
IoT	Internet of Thinks
K	Kilo
KB	Kilo Byte
LCD	Liquid Cristal Display
LDR	Light Dependent Resistor
LED	Light emitting Diode
mA	Mile Ampere
MAC	Media Access Control
Mbps	Mega Byte per Second
MCU	Microcontroller Unit
MHz	Mega Harz
MPU	Microprocessor Unit

N/O	Normally Open
N/C	Normally Close
PCB	Printed Circuit Board
PT	Potential Transformer
PWM	Pulse Wide Modulation
R	Resistance
RAM	Random Access Memory
RSR	Reset
RX	Receiver
RXD	Received Serial Data
R/W	Read Write
S/I	International System
SPDT	Single Pull Double Throw
SPP	Serial Port Protocol
TTL	Transistor-Transistor Logic
TX	Transmitter
TXD	Transmitted Serial Data
USB	Universal Serial Bus
V	Voltage
VCC	Voltage Common Collector
Vin	Input Voltage

LIST OF SYMBOLS

Ω	ohm
uF	Microfarad
nF	Nano farad
Ωt	Time Phase
°C	Degree Celsius
Q	Charge