A Dissertation On

**Camera Based Traffic Monitoring**

Submitted in Partial fulfillment of the requirement

for the award of Degree of

**MASTER OF ENGINEERING**

**(Electronics & Communication Engineering)**

Submitted By:

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**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**DELHI COLLEGE OF ENGINEERING**

**DELHI UNIVERSITY**

**2008-2011**

**CERTIFICATE**

 

**DELHI COLLEGE OF ENGINEERING**

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This is to certify that the work contained in this dissertation entitled **“Camera based Traffic Monitoring”** submitted by **Palla Dasthagiraiah,** University Roll No- 10053in the requirement for the partial fulfillment for the award of the degree of **Master of Engineering** **in Electronics & Communication Engineering**, Delhi College of Engineering is an account of his work carried out under my guidance and supervision in the academic year 2010-2011.

The work embodied in this major project has not been submitted to any other Institute/University for the award of any other degree to the best of my knowledge.

**Mrs.S.INDU**

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**I**

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**II**

# ABSTRACT

Due to heavy traffic congestion in city roads, commuting became a very difficult task for the common man. Hence we developed a traffic monitoring and classification system using visual sensors for implementing an efficient traffic management system.

The approach in this project is on appropriate methods of image processing and computer vision algorithms to be applied to road traffic flow and monitoring. The system involves extracting and analyzing the spatial and spatial temporal interest points. The traffic patterns are identified, classified using Gaussian Mixture Model (GMM), Expectation Maximization (EM) algorithms.

Traffic flow monitoring and traffic analysis is based on computer vision techniques in a real-time mode invoke precious and complicated demand of efficient computer algorithms and technological solutions. Real time traffic flow analysis then leads to generate reports of traffic volume count (without identifying and tracking vehicles) which helps in efficient designing of roads and transport system.

Traffic monitoring and classification using a distributed camera network is presented in this work. The activities on each road link are monitored and features are derived to identify the pattern. Then it is learnt, classified and communicated to neighboring road links. We used GMM-EM based classification. The proposed method is neither based on tracking nor on vehicle detection. Apart from this, the method is flexible, adaptive, robust and computationally light. Unlike the existing methods it does not assume or draws analogies of traffic moving as particles, neither does it impose restriction on road conditions or road tributaries and distributaries.

 **III**