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Study and Analysis of Effective Traffic Management on Porwal Road

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Abstract: ***In many contemporary cities around the world, traffic congestion is a serious issue. In the biggest and most crowded cities, traffic congestion has been a major source of issues and concerns. For those who must commute in traffic, getting about the city is becoming increasingly challenging. Because of the congestion issues cause individuals to waste time, pass on opportunities, and become irritated. Due to the ambulance's position in a traffic jam, there is a potential that someone could pass away inside of it. Damage to life and property could result if the fire department is unable to arrive in time. The companies are directly impacted by the traffic congestion. Due to traffic jams, workers are less productive, trade opportunities are lost, deliveries are delayed, and as a result***
Keywords: Traffic congestion, opportunities, fire brigade, companies, productivity, trade opportunities, facilities and infrastructure, intelligent traffic.

I. INTRODUCTION

A. *Congestion Of Traffic*

Road conditions that cause traffic congestion, due to a growth in traffic, which is more than the road's capacity, there are more accidents, more fuel is consumed, there is more air and noise pollution, etc. In general, traffic congestion occurs when cars go below the design speed of the road.

B. *Global Sciency*

The development of the country is being hampered by the growing population and urbanisation due to issues such a lack of land, water, food, employment opportunities, and traffic congestion, among others. One of these key issues that emerging nations like India must deal with is traffic congestion. In this modern era, the traditional methods of traffic congestion management are no longer effective, thus new and creative solutions must be devised and put into practise.

C. *India Scenario*

India has 1.21 billion people, making it the second most populous country in the world, according to the 2011 Census. In India, traffic congestion is a result of the vast rise in vehicle density brought on by the country's rapid population growth. One unacceptable issue in urban areas is traffic congestion, which is brought on by a sudden increase in private transportation and has an impact on urban society and the economy.

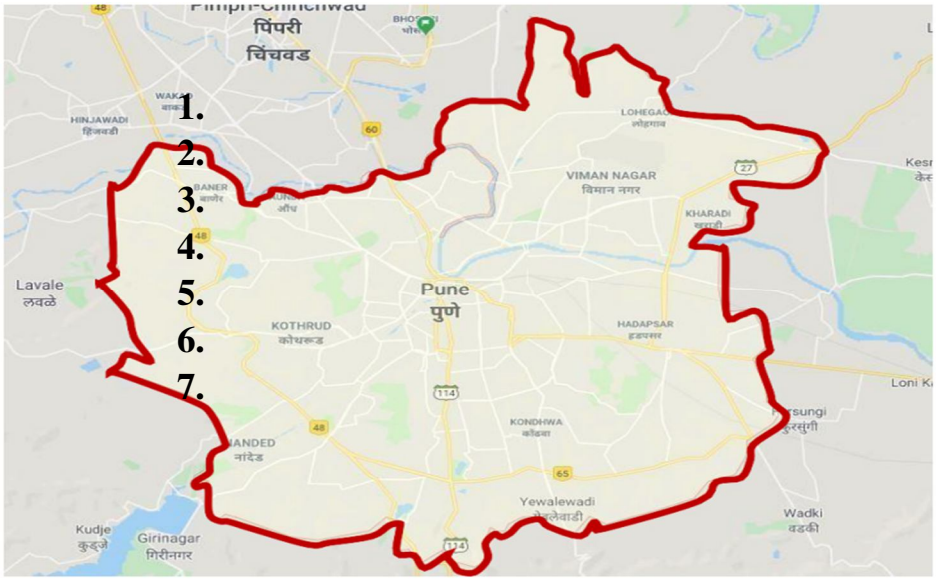
Congestion on the roads is a major problem. Since a decade ago, the average number of automobiles in India has been increasing at a pace of 10.16% each year [5]. Heavy traffic congestion is a problem in cities like Mumbai, Pune, Hyderabad, Bangalore, and Kolkata, among others.

D. *The Scenario Of Pune*

Pune serves as Maharashtra's industrial, IT, and educational hubs. Every year, more people move here from other countries. The rising standard of living in Pune leads to an increase in the use of private vehicles, which generates congestion at most junctions.

Pune is expected to grow to be one of India's largest cities, but the city's measures to reduce traffic aren't working. In the top ten list of the world's worst traffic conditions, Pune is one of three Indian cities.

The car density in Pune is 753 vehicles per 1000 persons, according to latest data [2]. Pune's biggest issue with traffic is a result of the infrastructure's delayed development in comparison to the city's growing population.



II. PROBLEM STATEMENT

A. Increasing Number of Population

Population growth is one of the key factors contributing to increased traffic congestion. Pune is also a centre for education, therefore the number of people moving here is growing every year, which is producing congestion.

B. Improper Lane Management

In Pune, lane management is a crucial component of traffic control. People rush to move forward, therefore the lane management is not observed, which leads to congestion.

C. Illegal Parking

The primary factor causing unlawful parking and subsequent traffic congestion is a lack of parking space. Congestion in Pune is primarily caused by illegal parking. Most illegal parking occurs in front of businesses like stores and movie theatres.

D. Encroaching of Footpath

In Pune the footpaths are mainly used for parking and it does not serve the actual purpose of it. Due to this, the pedestrians make use of the road which affects the management causing congestion.

E. Heavy Vehicle on Narrow Roads

Heavy vehicles passing through narrow roads block the whole road causing congestion for a longer time.

F. Accidents

Accidents are caused due to many reasons such as over speed, drink and drive, not following traffic rules, etc. sometimes causing loss to human life.

G. Irregular Public Transport

Irregularity of public transport encourages people to use private vehicles increasing density of vehicles on the roads causing congestion.

H. Street Hawkers

The footpaths are mainly occupied by street hawkers and vendors, which in turn increases congestion cause the pedestrians have to use the roads.

III. LITERATURE REVIEW

A. *Real-Time Traffic Management System ,Jehaan C. Darbari, Urvi V. Chavan, Kailash G. Bharti, Er. Manoj Kavedia, Mr. Amit Hatekar, ,International Journal for Research in Applied Science & Engineering Technology (IJRASET),Volume 10 Issue IV Apr 2022*

Following are the major findings from above paper:-

To overcome these problems, we propose a system that manages traffic by taking the primary factor of real time traffic density into consideration This system utilizes cameras along with image processing to achieve its goal. It ensures that the lanes switch based on the number of vehicles, consequently cutting down waiting periods while reducing pollution substantially.

B. *SMART TRAFFIC MONITORING AND CONTROLLING ,Rohit Prasad, Himanshu yadav, Devarsh kumar, Sachin pandey, Abhimanyu Yadav, ,Journal of Emerging Technologies and Innovative Research (JETIR) ,June 2021, Volume 8, Issue 6,2021*

Following are the major findings from above paper:-

The paper propose a system based on ATMEGA16 microcontroller that evaluates the traffic density using Laser sensors and accomplishes dynamic timing slots with different levels. A portable controller device is designed to solve the problem of emergency vehicles stuck in the overcrowded roads and notifying the vehicles the current traffic scenario.

C. *Review Paper on Modern Traffic Control System ,Shashi Kumar Ranjan, Shripad G. Desai, ,INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH IN TECHNOLOGY, January 2021 IJIRT Volume 7 Issue 8 .*

Following are the major findings from above paper:-

To keep away from such severe issues many radiant urban communities are right now implementing smart traffic control frameworks that work on the standards of traffic automation with prevention of the previously mentioned issues the research works reviewed adequately demonstrate the multiplicity of approaches possible to tackle traffic management problems in specified context Clearly dynamic systems using real time data and predictive models are better than the commonly used static systems which are insensitive to changing traffic conditions.

D. *A GIS-based approach to evaluating environmental influences on active and public transport accessibility of university students ,Khatun E. Zannata,, Mohammed Sarfaraz Gani Adnan, ,Journal of Urban Management 9 (2020) 331–346*

Following are the major findings from above paper:-

The results indicated that intersection density and land use are strongly associated with active and public transport accessibility, with weights of 0.17 and 0.16, respectively

The presence of infrastructure to support active travel, and regulation to limit vehicular speed, also improved accessibility.

Approximately 50% of the area of the Grenoble metropolitan region was defined as accessible and suitable (‘moderate’ to ‘very high’ degree) for active mobility.

E. *Land subsidence mapping and monitoring using modi Bed persistent scatterer interferometric synthetic aperture radar in Jharia CoalBeld ,SUNIL KUMAR1 , DHEERAJ KUMAR , SUMIT KUMAR CHAUDHARY, NARENDRA SINGH1 and KAPIL KUMAR MALIK, , India, Indian Academy of Sciences. Earth Syst. Sci. (2020) 129:146*

Following are the major findings from above paper:-

The study has been concentrated towards detecting continuous slow rate subsidence of major sites of JCF. The maximum rate of slow deformation among all sites is recorded as 29 mm/year with a cumulative subsidence value of 90 mm.

Field validation of subsidence results obtained through PS-InSAR is correlated with the previously published report and the master plan of JCF, showing subsidence locations.

F. *Assessing spatio-temporal growth of urban sub-centre using Shannon’s entropy model and principle component analysis: A case from North 24 Parganas, lower Ganga River Basin, India ,Md Kutubuddin Dhali , Monalisha Chakraborty, Mehebub Sahana , ,The Egyptian Journal of Remote Sensing and Space Sciences 22 (2019) 25–35*

Following are the major findings from above paper:-

The overall result shows that urban growth of the study area is not compact in nature and it is an evidence of concentration of sprawl growth over the urban sub-centre. The study estimates that urban expansion has occurred mainly in Barrackpore I, Barrackpore II and Rajarhat area of the district. The outcome of this study can best be utilized for effective urban planning and management.

G. *Smart Traffic Management System for Traffic Control using Automated, Mechanical and Electronic Devices ,Mamata Rath, International Conference on Mechanical, Materials and Renewable Energy ,Materials Science and Engineering 377 (2018)*

Following are the major findings from above paper:-

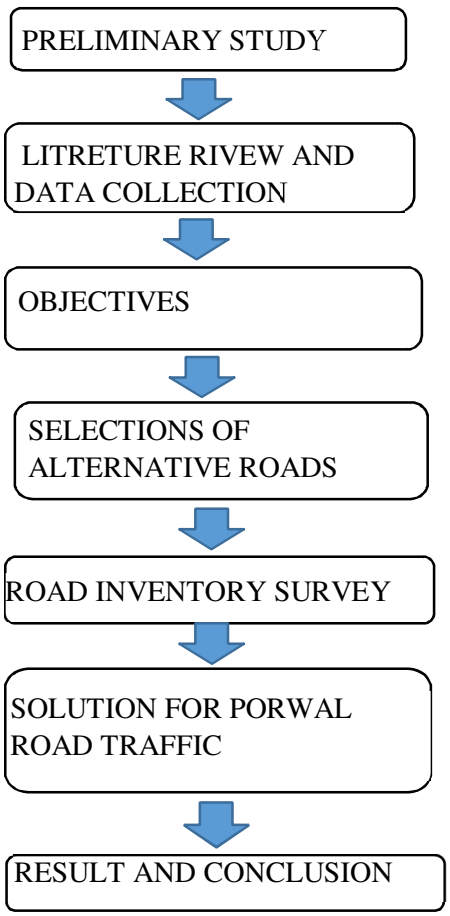
In this context, an enhanced traffic control and monitoring framework has been proposed in the present article that performs quick information transmission and their corresponding action.

In the projected approach, under a Vehicular Ad-hoc Network (VANET) scenario, the mobile agent based controller executes a congestion control algorithm to uniformly organize the traffic flow by avoiding the congestion at the smart traffic zone.

IV. METHODOLOGY

A flow chart is produced as the overarching research methodology for this project

Fig-2: Schematic Diagram of Methodology



V. OBJECTIVES

The study's main goal is to identify the actual cause of traffic congestion and to implement possible solutions to reduce traffic congestion.

Study Project Description:

1) Data collection and analysis for traffic volume.
2) Examine the vehicle flow pattern.
3) Analysis of collected traffic volume data
4) To determine the feasibility of the road stretch.
5) Investigation of the Public Transportation System
6) To offer a potential solution for reduced traffic congestion

VI. CONCLUSION

Ambulances, fire trucks, police cars, and other emergency vehicles will be exempt from this restriction and will be permitted to travel in the opposite direction. Porwal road runs from the Old Octroi chowk on the Dhanori-Lohegaon road to the D Y Patil road. Many new housing societies are being built along this stretch of Porwal Road, and there are at least two major schools. As a result, working people, students, and women must use this road only for daily commutes. The only option is to take the 6-kilometer route from Lohegaon village.

VII. ACKNOWLEDGMENT

Firstly, we are profoundly grateful to Prof. Dr. Aakanksha ingle for her expert guidance and continuous encouragement throughout to see that this project rights its target since its commencement to present. I would like to thanks Prof. Lt. Col. Sanjay Karodpati Head of Civil Engineering Department of Dr.D.Y.Patil School of Engineering and Technology Lohegaon , Pune and Prof. Manoj. U. Deosarkar Project Coordinator whose invaluable guidance supported us in this project

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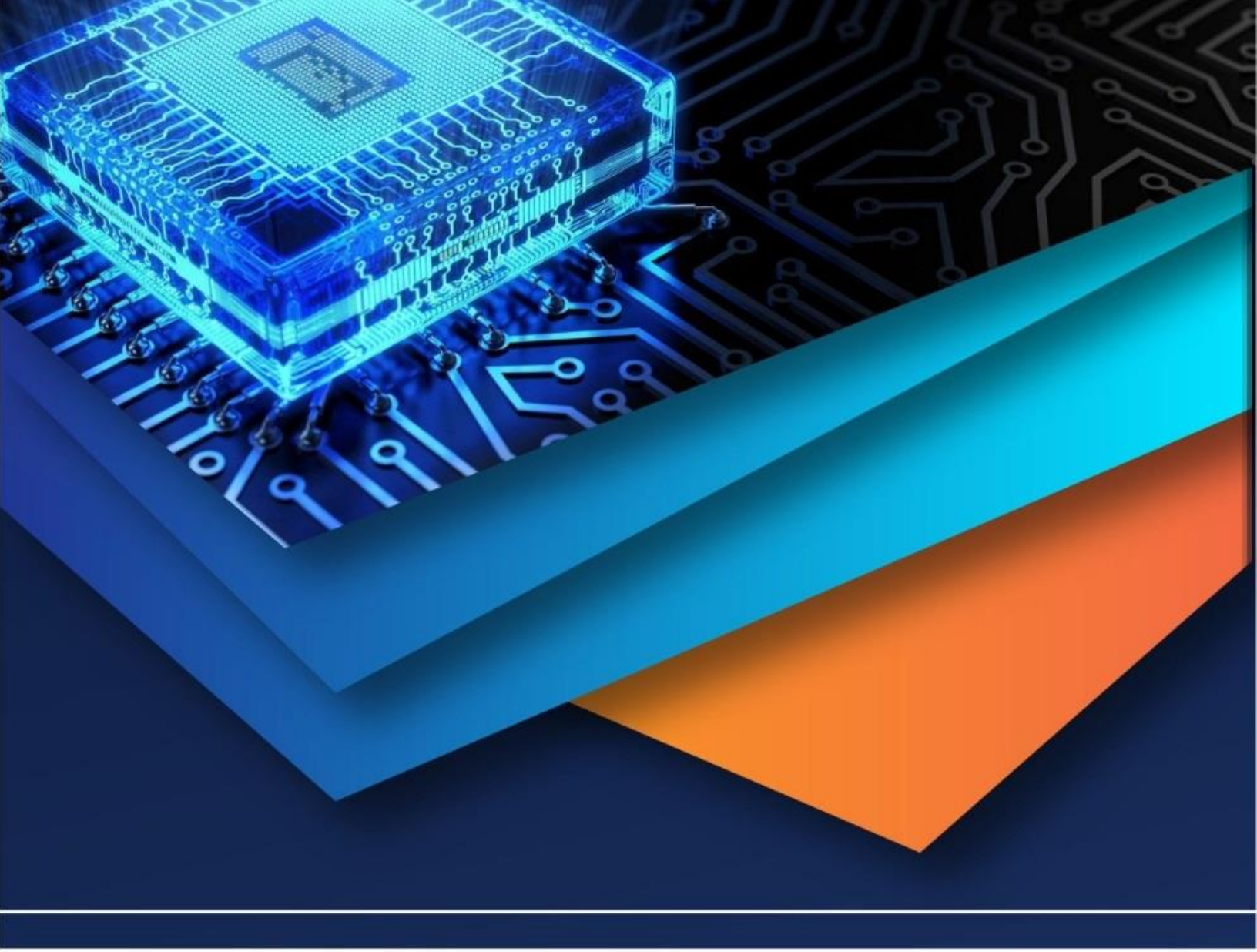

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