

# Review of Short term Traffic Flow using Soft Computing System

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**Abstract**— As the problem of urban traffic congestion spreads, there is a pressing need for the introduction of advanced technology and equipment to improve the state-of-the-art of traffic control. Traffic problems nowadays are increasing because of the growing number of vehicles and the limited resources provided by current infrastructures. The simplest way for controlling a traffic light uses timer for each phase. This paper presents a Fuzzy Traffic control logic with genetic Algorithm algorithm for short-term traffic flow prediction. Short-term traffic flow prediction has long been regarded as a critical concern for intelligent transportation systems. On this basis of many existing prediction models, each having good performance only in a particular period with real time traffic control logic. Today, traffic flow forecast as one of the topic in Intelligent transportation system. In this paper we have gone through a very brief idea on Genetic Algorithm, which is a very new approach for problems related to Optimization. There are many techniques used to optimize a function but in case of optimizing Multimodal Functions most of these techniques face a common problem of robustness. This can be overcome by using Genetic algorithm. through this paper we will learn how the Genetic Algorithm actually works with proper explanation and with some real time examples based on MATLAB.

**Index Terms**— Intelligent Transportation System (ITS), Fuzzy Logic , Genetic Algorithm

## I. INTRODUCTION

Automatic traffic monitoring and surveillance are important for road usage and management. Traffic parameter estimation has been an active research area for the development of intelligent Transportation systems (ITS). This brief presents with the development of our modern cities, growing traffic problems adversely affect people's traveling convenience more and more, which has become one of the most crucial factors considered in urban planning and design in recent years. Urban traffic congestion is a severe problem that significantly reduces the quality of life in particularly metropolitan areas. It Improved management of flow of traffic, To reduce overall delays through improved planning techniques, To improve traffic flow thought the entire system by providing effective real time information to traffic controllers and thus enhancing the system performance, To improve Optimization time and congestion control. However, frequently constructing new roads is not realistic and untenable in social and economic aspects. In the effort to deal with this intractable problem, so-called intelligent transportation systems (ITS) technologies are successfully implemented widely throughout the world nowadays. Traffic forecasting is a branch of forecasting, and it is an important part of modern transportation planning and intelligent transportation system. Advanced traffic management and information system components directly in traffic monitoring data as inputs. Short-term traffic flow prediction has long been regarded as a critical concern for intelligent transportation systems. In particular, such traffic flow forecasting supports 1.the development of proactive traffic control strategies in advanced traffic management systems ATMSs; 2.real-time route guidance in advanced traveler information systems ATISs; and 3.evaluation of these dynamic traffic control and guidance strategies as well. In an early report on the architecture of intelligent transportation systems Soft Computing System term used in computer science to refer to problems in computer science whose solutions are unpredictable, uncertain and between 0 and 1. Soft Computing became a formal area of study in Computer Science in the early 1990s. Fuzzy Logic is an approach to computing based on "Degrees of truth" rather than the usual "true or false" (0 or 1) Fuzzy logic seems closer to the way our brains work. We aggregate data and form a number of partial truths which in turn when certain threshold are exceeded cause certain results. A similar kind of process is used in artificial computer neural network and expert system. Fuzzy logic is a form of many-valued logic; it deals with reasoning that is approximate rather than fixed and exact. Compared to traditional binary sets, fuzzy logic variables may have a truth value that ranges in degree between 0 and 1

## II. LITERATURE REVIEW

"Prediction of short term traffic variables Using Intelligent Swarm based Neural network" B. Abdulhai, H. Porwal, and W. Recker, In this paper it provide traffic flow forecasting information for traffic management in order to reduce traffic congestion and improve mobility of transportation. This presents an innovative algorithm integrated with particle swarm optimization and artificial neural networks to develop short-term traffic flow predictors,. The proposed algorithm aims to address in the current literature namely that: 1) strongly non-linear characteristics are unavoidable in traffic flow data; 2) memory space for implementation of short-term traffic flow predictors is limited; 3) specification of model structures for short-term traffic flow predictors which do not involve trial and error methods based on human expertise; and 4) adaptation to newly-captured, traffic flow data is required.

Portable roadside sensors for Vehicle counting, Classification, and Speed Measurement” Saber Taghvaeeyan and Rajesh Rajamani focuses on the development of a portable roadside magnetic sensor system for vehicle counting, classification, and speed measurement. This paper focuses on the development of a portable roadside magnetic sensor system for vehicle counting, classification, and speed measurement. The sensor system consists of wireless anisotropic magnetic devices that do not require to be embedded in the roadway—The use of the proposed algorithm reduces this error to only 1%. Speed measurement is based on the calculation of the cross correlation between longitudinally spaced sensors. An algorithm for automatically correcting for any small misalignment of the sensors is utilized. A high-accuracy differential Global Positioning System is used as a reference to measure vehicle speeds to evaluate the

EasiSee Real Time Vehicle Classification and Counting Via Low Cost Collaborative Sensing Lei Zhang, Kjiang Xiao, Rongli Sun, LI Cui .In this paper they are design and implement EasiSee, a real-time vehicle classification and counting system based on WSNs. , A low-cost image processing algorithm In the field of traffic-information acquisition, one pervasive solution is to use wireless sensor networks (WSNs) to realize vehicle classification and counting. By adopting heterogeneous sensors in a WSN, we can explore the potential of using complementary physical information to perform more complicated sensing computation

Sensor fusion based vacant parking slot detection and tracking Jae Kyu Suhr, Ho Gi Jung, This paper proposes a vacant parking slot detection and tracking system that fuses the sensors of an AVM)system and an ultrasonic sensor-based automatic parking system. This paper has presented that 1) parking slot markings can be successfully detected and tracked by fusing two off-the-shelf parking aid systems, 2) parking slot markings can be reliably detected in AVM image sequences by combining sequential detection results, 3) occupancy of parking slot can be efficiently classified by treating each parking slot region as a cell of an occupancy grid, and 4) parking slot markings can be tracked robust against severe occlusions by fusing an AVM image and odometry in the DCM score level. As a result of quantitative evaluation using practical databases, the proposed system achieves 97.8% recall and 95.8% precision for parking slot marking detection, 98.1% classification rate for parking slot occupancy classification, and accuracy of 3.1 cm and 0.9° for parking slot marking tracking.

Short-Term Traffic Flow Forecasting: An Experimental Comparison of Time-Series Analysis and Supervised Learning Marco Lippi, Matteo Bertini, and Paolo Frasconi We have presented an extensive experimental review of many statistical and machine learning approaches to short-term traffic flow forecasting

### III. CONCLUSION

The assistive navigation is designed and developed To reduce overall delays through improved planning techniques from this technique we can improve traffic flow through the entire system by providing effective real time information to traffic controllers and thus enhancing the system performance and it is also improve Optimization time and congestion control The study showed that it is a better technique to control the state change of the traffic light. It shows that it is also more consistent in detecting vehicle presence because it uses actual traffic images. It visualizes the reality so it functions much better than those systems that rely on the detection of the vehicles' metal content. Overall, the system is good but it still needs improvement to achieve a hundred percent accuracy and improving accuracy we have to use Genetic Algorithm.

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### REFERENCES

- [1] Kit Yan Cha Tharam Dillon Elizabeth Chang Jaipal “Prediction of short term Traffic Variables using Intelligent Swarm based Neural network” Technol., vol. 21, pp. 99–124, Jan. 2013.
- [2] Saer Taghvaeeyan and Rajesh Rajanmani A. Alessandri, R. Bolla, M. Gaggero, and M. Repetto, “Portable roadside sensor For vehicle Conting and Speed measurment,” IEEE Trans. Vol 15 no. February 2014
- [3] Vismay Pandit Jinesh Doshi D. J Sanghvi “Smart traffic control system using image Processing” Volume 3, Issue 1, January – February 2014
- [4] M. Bottero, B. Dalla Chiara, and F. P. Deflorio, “Wireless sensor networks for traffic monitoring in a logistic center,” Transp. Res.—Part C: Emerg. Technol., vol. 26, pp. 99–124, Jan. 2013.
- [5] EasiSee:Real-Time Vehicle Classification and Counting via Low-Cost Collaborative Sensing Rui Wang, Member, Lei Zhang, Kejiang Xiao, Rongli Sun, and Li Cui, Member, IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS, VOL. 15, NO. 1, FEBRUARY 2014
- [6] M. Bottero, B. Dalla Chiara, and F. P. Deflorio, “Wireless sensor networks for traffic monitoring in a logistic center,” Transp. Res.—Part C: Emerg. Technol., vol. 26, pp. 99–124, Jan. 2013.
- [7] IEEE TRANSACTIONS ON CONTROL SYSTEMS TECHNOLOGY, VOL. 21, NO. 1, JANUARY 2013 263 Prediction of Short-Term Traffic Variables Using Intelligent Swarm-Based Neural Networks Kit Yan Chan, Member, IEEE, Tharam Dillon, Fellow, IEEE, Elizabeth Chang, Senior Member, IEEE, and