



Vidya Vikas Education Trust's

Universal College of Engineering

Near Bhajansons and Punyadham, Kaman Bhiwandi Road, Vasai, Palghar-401208.
(Permanently Unaided | Approved by AICTE, DTE & Affiliated to University of Mumbai)

Accredited with B+ Grade by NAAC | Gujarati Linguistic Minority Institution

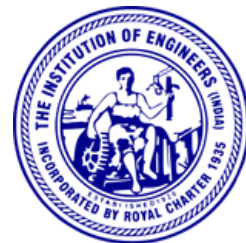
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THE BENCHMARK

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We are pleased to present the February 2023 edition of Benchmark. In this edition, you will find an article on the "SMART CITY - SURAT " and the contribution by Students and Faculty members of the Department of Civil Engineering highlighted in the month of January. News updates and departmental activities are part of Canvas.

Department Vision:

- To excel in every area of Civil Engineering, inculcate research oriented study to explore hidden talent.
- Providing Opportunity to display creativity, out of the box thinking & innovativeness, aimed at providing cutting edge technology for sustainable development.

Department Mission:

- Providing qualified, motivated faculties to deliver the content using updated teaching methodology, inviting industry experts from various areas to disseminate subject knowledge in Civil Engineering.
- Motivating students to undertake the Research Oriented studies, participate in competitions at all levels, grasping new techniques and methods which can be improved on further.
- Conducting and participating in seminars, workshops and training programs with a view to make the students industry ready and improve their employability factor for global career ahead.
- To create quality professionals capable of planning, designing and analytical skills for better infrastructural development in the field of Civil Engineering.



Smart Cities Mission along with Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and Urban Housing Mission was launched on 25 June 2015 under the leadership of Narendra Modi by Ministry of Housing and Urban Affairs. Smart City Mission is one of the pet projects of Government of India wherein Government is aspiring to create 100 Smart cities in time to come. **Surat Municipal Corporation (SMC)** is selected on the list of 98 smart cities declared by the Government of India for the expansion of Smart Cities Mission. Surat is selected in the first round of selected 20 Smart Cities and has implemented largest number of projects under Smart City Mission. It received an award by Ministry of Housing and Urban Affairs, Government of India for its work in the areas of urban environment, mobility, transport and sustainable integrated development.

The Objective of Surat Smart City is 'To promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart Solutions'. Surat Smart City Development Limited (SSCDL) is formed as a Special Purpose Vehicle (SPV) for the implementation of the Smart City projects at the city level.

Projects:

Surat Municipal Corporation has set a special purpose vehicle (SPV), Surat Smart City Development Limited (SSCDL) for implementing the developing projects. It has completed 53 works worth Rs. 1204 crores within two years out of total 76 projects worth Rs. 2988 crores. Few amongst the various projects launched by SSCDL are as below

- Integrated Traffic and Mobility Administration Centre.
- Incubation Centre.
- SUMAN eye (CCTV Network)

Awards and accolades:

SSCDL is incidental in launch of various e-Governance and m-Governance projects which have been recognised at national/international level. Below is Partial list of Awards presented to SSCDL:

- SSCDL bags three Smart Urbanization Awards by Smart Cities Council of India at Bengaluru. Business World Smart Cities Award 2016 (winner) for SMC Mobile App.
- Surat Smart City has been selected for the City Award for "great

momentum" in implementation of projects under India Smart City Awards by Housing and **Urban Affairs Minister**.

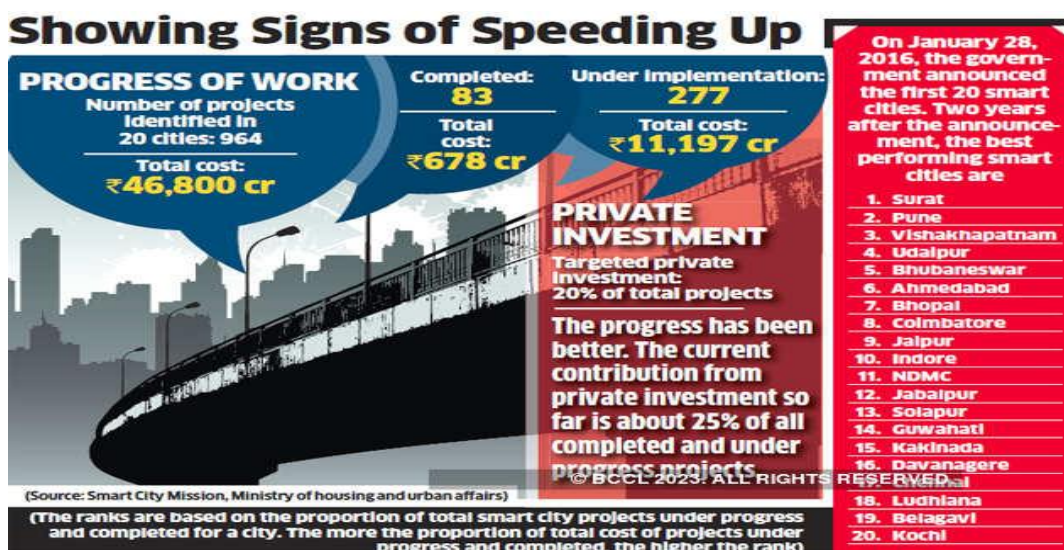
Surat Smart City Development Limited got incorporated on 31 March 2016. Built in 1860, Surat railway station falls under the administrative control of Western Railway zone of the Indian Railways. The Sitalink or Surat BRTS is a bus rapid transit system in the city. Initiated by Bharat Shah, additional city engineer of Surat Municipal Corporation. It is operated by Surat

Municipal Corporation and as of August 2017, had a network of 245 buses connecting major localities. Surat International Airport located in Magdalla, 11 kilometres (7 mi) southwest of Surat. It is the 2nd busiest airport in Gujarat in terms of both aircraft movements and passenger traffic. There are also running international flights for the Sharjah route of Air India Express. Apart from the main city, Surat Airport also caters to various localities of south Gujarat including Navsari, Bardoli, Valsad, Bharuch, Ankleshwar. Surat Metro is an under construction rapid transit rail system for the city.

By Deep Parikh (B.E CIVIL)



This topic will be helpful for Civil Engineering Students in URBAN MANAGEMENT as their Post-Graduation and Elective Subjects during Under Graduate Study.

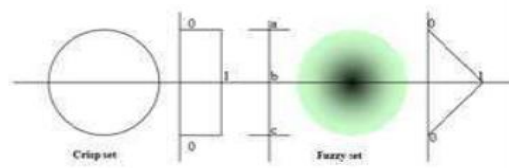


Interesting Facts Published in Times of India Article

Selection of Optimum Machinery in Construction Project Using Artificial Neural Network Technique

Need of this: Selection of machineries in construction projects is a central element in the planning phase of the life cycle of the project. Appropriately selected machineries are the lifeblood of any multi-storeyed construction project and contribute largely to the efficient, timeliness, and profitability of the project. An error in selection can lead to large and unnecessary expenses arising from operational inadequacy or failure, and can produce an unsafe working environment. Decision to select particular machineries depends on the factors such as project size, project terrain, size of the structure being erected as well as economy, safety, and weather conditions and their variability are considered for selection of machineries. Machineries operators perform large amount of work on machineries based on the limited information they obtain from the site. **Engineers are increasing their risk by relying on this limited information for the optimum selection of machineries**, which leads to huge amount. It is expected that optimum selection of machineries lowers the risk and costs associated with the machineries. Selecting machineries depends greatly on skilled judgment that accounts for all likely involved variables. Much information is available to assist in this process in the form of work study data, manufacturers' machines performance, specifications, and guidelines on methods of calculating production output, labour resources and equipment requirements. Parameters mentioned above are qualitative, and subjective judgments implicit in these terms **cannot be directly incorporated** into the classical decision-making process. Some of these factors are partially quantified and often entangled with personal opinions and seldom based on scientific analysis. These considerations are handled using fuzzy logic techniques. fuzzy logic approach is an aid to the contractor in the proper machinery's selection. From expert's opinions in terms of membership values of fuzzy sets are aggregated by modified pessimistic aggregation procedure and final selection will be achieved by Dominance Matrix.

METHODOLOGY/ SOLUTION : Fuzzy logic is a superset of Boolean-conventional logic that has been extended to handle the concept of partial truth and truth values between completely true and —completed false. Fuzzy logic should be seen as a data analysis methodology to generalize any specific theory from —crisp to continuous. Fuzzy modelling opens the possibility for straightforward translation of the statements in natural language—verbal formulation of the observed problem into a fuzzy system. Its functioning is based on mathematical tools. The basic operations of the set theory are intersection, union, and complement extended for the purpose of fuzzy logic. The applicability of fuzzy logic in the field of construction management is quiet notable. Fuzzy logic allows expressing this knowledge with subjective concepts such as good weather and a little bit experienced contractor etc., which are mapped into exact numeric ranges. A number of practical and wide-ranging applications are available that fuzzy logic can bring about in the field of construction management.



Demonstration of a crisp set and fuzzy set

Metanalysis is a statistical technique for combining the research findings from independent studies. The essential character of metanalysis is that it is the statistical analysis of the summary findings of many empirical studies. It can be understood as a form of survey research in which research reports, rather than people, are surveyed. A coding form is developed, a sample or population of research reports is gathered, and each research study is —interviewed by a coder who reads it carefully and codes the suitable information about its characteristics and quantitative findings. Since the aim of this research study is to summarize and present a critique of the existing fuzzy literature so as to investigate which major categories fuzzy techniques are strong to analyze and provide a path for future research studies on some areas, content analysis, instead of metanalysis, was deployed in this research study because it was not aimed at conducting statistical analysis by combining the research findings from a number of independent empirical research studies.

By using the content analysis method in this research study, four major categories of applications have been grouped under two broad fields.

The two broad fields are: (1)fuzzy set/fuzzy logic; and (2) hybrid fuzzy techniques.

The four major categories are:

- (1) decision making
- (2) performance
- (3) evaluation assessment
- (4) modelling.

Content analysis is frequently adopted to determine the major facets of a set of data, by simply counting the number of times an activity happens, or a topic is depicted. The first step to conduct content analysis is to identify the materials to be analysed. The second step is to determine the form of content analysis to be used, which includes qualitative, quantitative, or structural. The choice is dependent on the nature of the research project. The choice of categories will also depend upon the issues to be addressed in the research if they are known. In qualitative content analysis, emphasis is on determining the meaning of the data i.e., grouping data into categories. Quantitative content analysis extends the approach of the qualitative form to generate numerical values of the categorized data frequencies, ratings, ranking, etc. which may be subjected to statistical analyses. Comparisons can be made and hierarchies of categories can be examined.

Although fuzzy techniques have been increasingly applied in the research area of construction management during the last decade, no paper has attempted to draw up a holistic commentary

of the existing fuzzy literature. To fill up this research gap, this paper provides a comprehensive review on the fuzzy literature that has been published in eight selected top-quality journals from 1996 to 2005.

It has been found that fuzzy research, as adopted in the construction management discipline over the past decade, can be divided into two broad fields, encompassing:

- (1) Fuzzy set/fuzzy logic
- (2) hybrid fuzzy techniques,

Their applications in four main categories, including:

- (1) decision
- (2) performance
- (3) evaluation/assessment
- (4) Modelling.

The applications of fuzzy techniques on these categories are very effective and practical because they can help to develop models to make decisions and to evaluate the performance in a wide range of areas when analysing problems encountered in the construction industry, which are widely regarded as complex, full of uncertainties, and contingent on changing environments. Having conducted a comprehensive overview on the applications of fuzzy techniques in construction management research, it puts forward new directions for fuzzy research and its application in construction management research. It is suggested that future research studies on fuzzy set/fuzzy logic can constantly be applied on the four major categories mentioned previously. Fuzzy membership functions and linguistic variables can be particularly employed to suit applications to tackling construction problems facing the aforesaid nature of construction. In addition, hybrid fuzzy techniques, such as neuro-fuzzy and fuzzy neural network, can be more broadly adopted because they can better solve some construction problems that fuzzy set/fuzzy logic alone may not best suit. For example, neural networks are strong in pattern recognition and automatic learning while fuzzy set and fuzzy logic are strong in modelling certain uncertainties. Their mixture can assist in developing models with uncertainty under some forms of pattern. It is believed that the application of fuzzy techniques will go beyond the construction management area into these disciplines as well.

BY USAMA DIWAN

(ASSI. PROFESSOR)



Republic Day is the day when India marks and celebrates the date on which the Constitution of India came into effect on 26 January 1950 A very proud day for all the Indians.

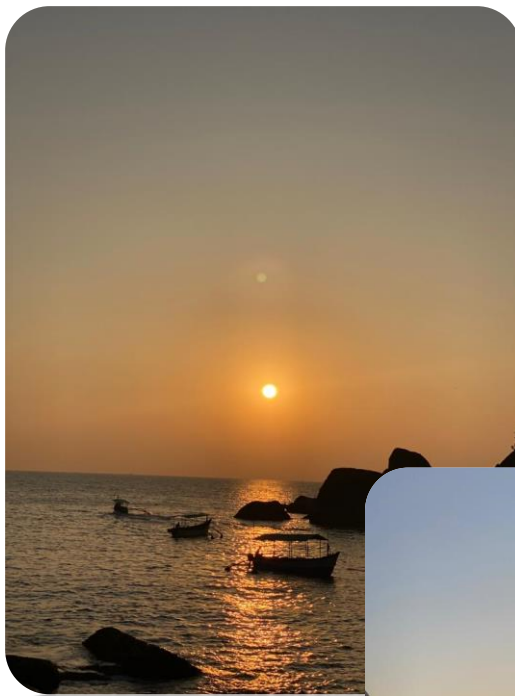
On this day all the faculties and students celebrate Republic Day and hoist the National flag at Universal College of Engineering. The day began when Prof. Rajesh Dubey & Architect Vaishnavi Kalzunkar hoisted the National Flag and all the faculties along with the students sang the National Anthem. It was followed by a pledge from NSS and a very beautiful in-sync parade from a student of Universal College of Engineering. Then the Principal of Universal College of Architecture, Architect Vaishnavi Kalzunkar gave a speech about the importance of Republic Day. The head of Department of Civil Engineering, Prof. Rajesh Dubey conveyed an important message of freedom on this Republic Day. The day was then followed by performances by the students. Association of Civil Engineering Students (ACES) also participated in the celebration by performing a beautiful dance portraying the progress of India after the freedom from the British Rule.



CANVAS



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