VASAVI COLLEGE OF ENGINEERING
DEPARTMENT OF CIVIL ENGINEERING
INNOVATIVE PROJECTS

2020-21

S No	HT No.	Name of the Student	Title	Name of the Guide
1	1602-17-732-006	ANKAM CHANDRA KANTH	Analysis of Urban mobility using Uber movement data	Dr. K. Jayasree
	1602-17-732-018	BIRUKURI NAVYASHANTHI		
	1602-17-732-052	TATIPAMULA SRINIVAS		
2	1602-17-732-025	RAIKINDI PREM KUMAR	Pond ash Embankment analysis using GEOSTUDIO	Sri. S. Kesav Kumar
	1602-17-732-040	B. SANTHOSH KUMAR NAIK		
	1602-17-732-309	KOTHAPALLI BHAVYASRI		

2019-20

S No	HT No.	Name of the Student	Title	Name of the Guide
1	1602-16-732-015	K. VENKATA SAI LASYA	Survey and Design of Lift Irrigation Scheme	Dr. G. Shravan Kumar / Mrs. N. Niharika
	1602-16-732-018	M. MEGHANA		
	1602-16-732-056	N. VENU		
2	1602-16-732-031	K. SAI ANIRUDH	Off street parking facility site location in residential areas using GIS and MCE technique – A case study of Mehdipatnam region in Hyderabad	Dr. K. Jayasree
	1602-16-732-050	V. SRIPRIYA		
	1602-16-732-061	K. NIHARIKA REDDY		
3	1602-16-732-015	T. AKHIL KUMAR	Optimization of Reinforcement in Slopes Reinforced with Geogrids by performing Limit equilipbrium Analysis using Geostudio (Slope/W)	Sri. S. Kesav Kumar
	1602-16-732-018	S. PRANAV REDDY		
	1602-16-732-056	K. SHRAVAN KUMAR		

2018-19

S No	HT No.	Name of the Student	Title	Name of the Guide
1	1602-15-732-028	VEMULA.ROOPIKA	Road Traffic Accident Hot Analysis using spatial data mining with GIS as a supporting tool	Dr. K. Jayasree
	1602-15-732-029	BHEEMREDDYVALLA.SADAJA		
	1602-15-732-043	LINGAM.SHIVA NISCHAL		
2	1602-15-732-002	GUNTUPALLY.AARYAVARDHUN	Analogy of Ground Based Rainfall observations to satellite based observations from TRMM and GPM	Ms. P.Adilakshmi Padmini
	1602-15-732-007	A.ANURAGHAVA REDDY		
	1602-15-732-012	P.HIMABINDU		

2017-18

S No	HT No.	Name of the Student	Title	Name of the Guide
1	1602-14-732-001	ABDUL WASAE SYED	Combating Complications In Construction By Critical Chain Project Management (CCPM)	Ms. R. Sowmya
	1602-14-732-023	KOTA MANIDEEP REDDY		
	1602-14-732-044	THOTA SAMANVITA		
2	1602-14-732-005	MOORTHY ANILA	Spatial Analysis of Road Network Using GIS	Dr. K. Jayasree
	1602-14-732-006	PODUGU ANJALI		
	1602-14-732-046	KATRAGADDA SATVIKA		
	1602-14-732-049	V. SNEHITH REDDY		

2015-16

S No	HT No.	Name of the Student	Title	Name of the Guide
1	1602-12-732-035	VOLETI SAI ANOOP ADITYA	Damage Detection in Beams using Wavelet Analysis	Dr. B.Narender
	1602-12-732-049	DANNANA SRAVYA		
	1602-12-732-304	SIRIPURAM SRINATH		
2	1602-12-732-001	ABHI MUKESH SHRIVAS	Impact Assessment of Intermediate Para Transit (private cabs) on Hyderabad City Transport	Dr. K.Jayasree
	1602-12-732-002	MALLIGONDA ABHILESH		
	1602-12-732-042	AEDDLA SHASHANK		
	1602-12-732-059	N VISHWAPRIYATHAM		

2014-15

S No	HT No.	Name of the Student	Title	Name of the Guide
1	1602-10-732-014	GAYATHRI SRI BRUNDAVANAM	Sustainable Rural Road Network Planning with a Balance of Urban and Rural Development	Dr. K. Jayasree
	1602-11-732-306	GOVIND DIVYA		
	1602-11-732-309	SRUNGARAPU RENUKA		
	1602-11-732-310	VANGALA NAVYA		
2	1602-11-732-004	AHMAD SEAR SULTANI	Stabilization of Expansive Soils for Pavement using Granite Dust and Ceramic Waste	Ms. P.Archana
	1602-11-732-014	G. KAMALAASAN		
	1602-11-732-026	NOOR AHMAD SHIRZAD		
	1602-11-732-052	N. SRIRAM REDDY		
	1602-11-732-305	GUGULOTH PAVAN		

2020-21

ANALYSIS OF URBAN MOBILITY USING UBER MOVEMENT DATA: A CASE STUDY OF HYDERABAD CITY IN TELANGANA

Ankam Chandrakanth (1602-17-732-006)
Birukuri NavyaShanthi (1602-17-732-018)
Tatipamula Srinivas (1602-17-732-052)

ABSTRACT

New traffic data sources have emerged raising new challenges and opportunities when applying novel methodologies. The purpose of this study is to analyze Uber car travel time's data collected from Uber Movement site. Utilizing the Movement dataset recently released in the year 2016, it is proposed to find the friction index, Congestion index, Travel time delay transition index and fractal dimension for road network of different wards present in Hyderabad using O-D mean travel time matrix for four consecutive years. So, the travel times of uber vehicles for four consecutive years i.e., 2016, 2017, 2018 and 2019 in the month of January had been collected and formed into four O-D matrices in between 145 wards present in Hyderabad. Friction index, Congestion index, travel time delay transition index and fractal dimension for road network had been calculated from the matrices and compared the variation over four years. Geographic Information System (GIS) tools were employed in this study to analyze and visualize data. In doing so the choropleth and heat maps were prepared to show the variation of friction index in the city. Graphs representing the variation of congestion index and travel time delay transition index for most accessible zone and least accessible zone are plotted for each year. Fractal dimension for the road network is plotted on log-log scaled graph. The accessibility analysis allowed to identify the best accessible wards in Hyderabad.

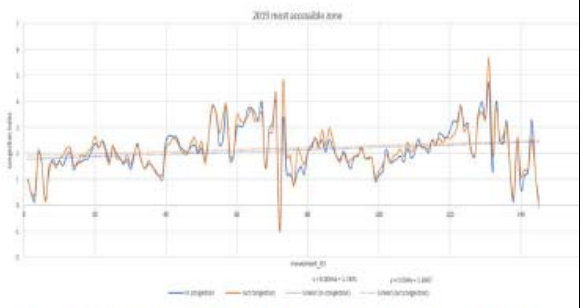


Figure 6.12: Graph showing the variation in values of Congestion index for Most accessible zone – 2019

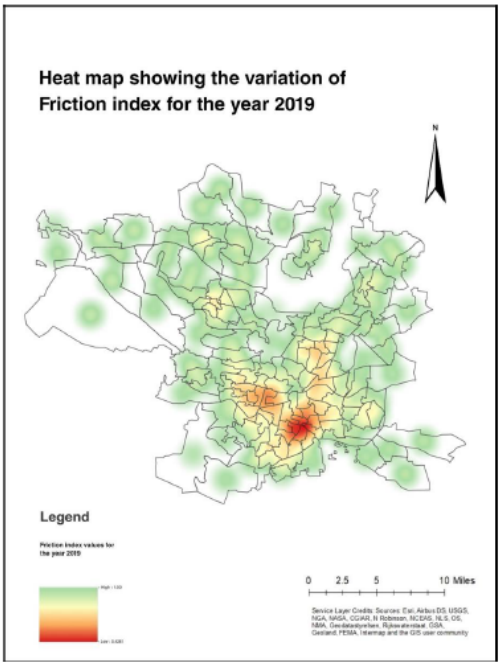


Figure 6.8: Heatmap showing variation of Friction index 2019

2020-21

POND ASH EMBANKMENT STABILITY ANALYSIS USING GEOSTUDIO

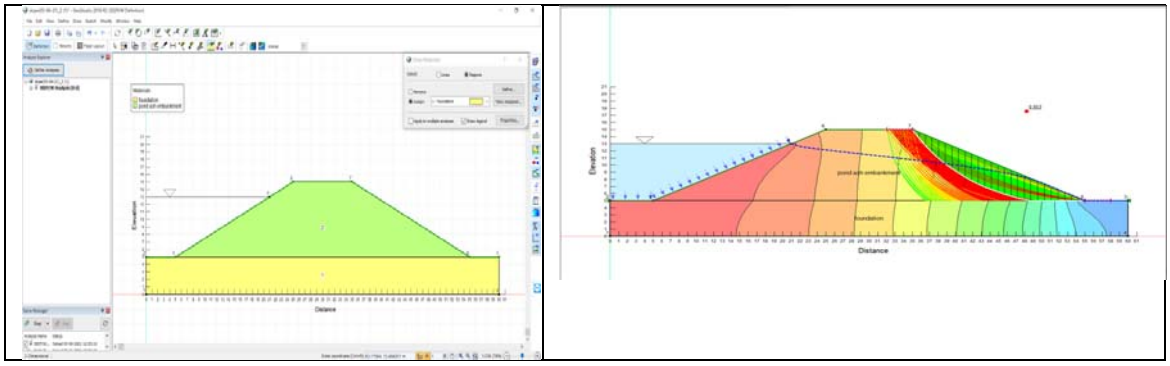
R.PREM KUMAR (1602-17-732-025)

B.SANTHOSH KUMAR NAIK (1602-17-732-040)

K.BHAVYA SRI (1602-17-732-309)

ABSTRACT

The major problems the world is facing today are the scarcity of conventional construction material on one hand while on the other hand, large amounts of unutilized industrial wastes causing serious environmental problems and ecological imbalance. This study aids in the effective utilization of pond ash to reduce the environmental problems and to preserve the valuable topsoil. The main objective of this study is to reinforce the pond ash with reinforcement(geogrid) and study its behaviour (Stabilization by inclusion and confinement). The varying parameters considered are aperture opening, number of layers, the placement depth of geogrid, and thickness of geogrid. The reinforced pond ash embankment is analysed by considering different reinforcement Properties and different methodologies for Embankment Stability Analysis by using Geostudio. The results of unreinforced pond ash embankment is compared with unreinforced soil embankment. From the results, the optimum reinforcement design is found out for its utilisation as construction material of an embankment.



2019-20

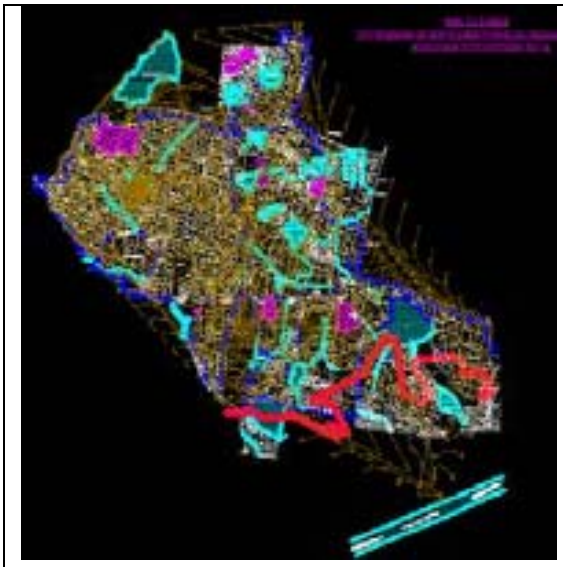
1. Survey and Design of Lift Irrigation Scheme

K.Lasya (1602-15-732-015)
M.Meghana (1602-15-732-018)
N.Venu (1602-15-732-056)

ABSTRACT

Lift irrigation is a very prominent and innovative form of water supply for land cultivation and farming. This contemporary method of agriculture has made itself popular over the course of time. Many countries all over the world has opted for this mode of cultivation and have seen significant progress overall. While growing technology has led to an increase in pollution levels, it is crucial for us at this point of time to come up with new innovative forms of irrigation to ensure unhindered agriculture growth. It has helped tremendous farmers and opened new mediums for agriculture. Majority of low lying and barren areas have now become fertile and cultivable through the help of lift irrigation schemes.

In our project, we are designing one such schemes.It is a holistic process and involves everything from survey, design, cost estimation and report making. We started our project by initially digitizing village map of Pipri that was acquired by us from Survey of India. We digitized using Autocad software. After completing digitization, we headed to Pipri village and started surveying using DGPS. We surveyed over 5000 acres of irrigation land and we were able to complete the whole process in a span of ten days. Later we converted the gathered survey points into data using Autoplotter software. With the help of previously digitized map we generated contours and finished drawing essential proposals for design. Further in our project we will be dealing with remaining design process. The performed design will give the government a rundown on how how much area has to be taken on the project for design of pipe lines, installation and construction of pumphouse. It also gives them the best possible locations over installation of various proposals. This scheme of ours is ensured to improve agriculture practices and make land more fertile in future. Farmers from nearby villages will benefit significantly and this scheme makes it certain for modern day agriculture practices to be prevalent.



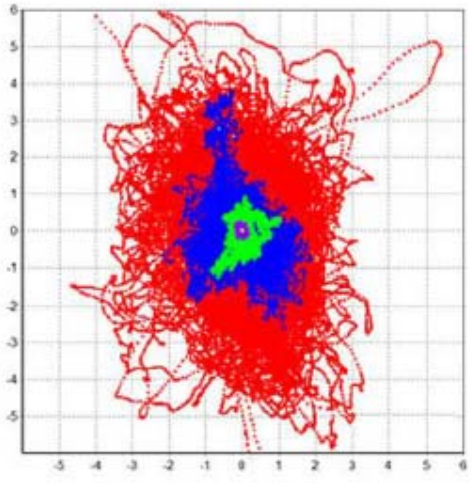


Fig 3.7 24 hours position scatter plot

2019-20

2. Off street parking facility site location in residential areas using GIS and MCE technique – A case study of Mehdipatnam region in Hyderabad

K. Sai Anirudh (1602-16-732-031)
V. Sripriya (1602-16-732-050)
K. Neharika (1602-16-732-061)

ABSTRACT

The significance of mitigating on street parking is that, it reduces obstruction on either side of the road and ensures free flow of traffic. This study has aimed at optimal site selection in Mehdipatnam, Hyderabad, where Multi Criteria Decision Making (MCDM) has been used. The primary issue of the project is, on street parking congestion, on either sides of the road, in residential spaces - which results in obstruction of free traffic flow in communal spaces. This report has discussed the collective decision making through Fuzzy Logic and Analytical Hierarchy Process (AHP) methodology to predict site selection - to reduce on street parking congestion. Both, AHP and Fuzzy Logic have almost given the same weightage for the criteria, wherein there were about 11 defined criteria chosen. Furthermore, GIS has been used as a supporting tool for the analysis. The walking distance has been obtained by traversing from midpoints of the road to the site. In addition, these values obtained have been normalized. This has been done by using maximum minimum method of normalization. The weightages have been calculated using AHP and Fuzzy Logic, these weightages and normalized criteria values have been multiplied. Finally, the achieved results of this project suggest that, site no. 2 has been chosen as a suitable site for construction of parking lot.

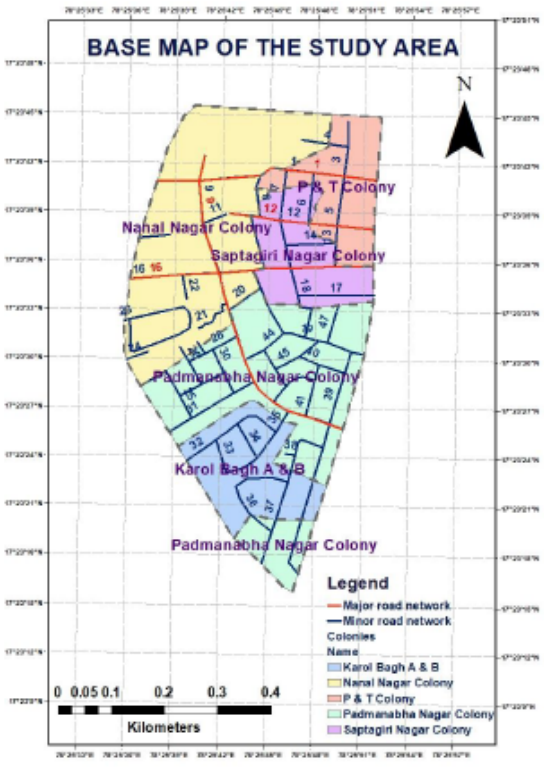


Fig: 3.3 Base map of the study area

Fig: 3.22 Heat map visualizing parking demand for the hour 5PM

2018-19

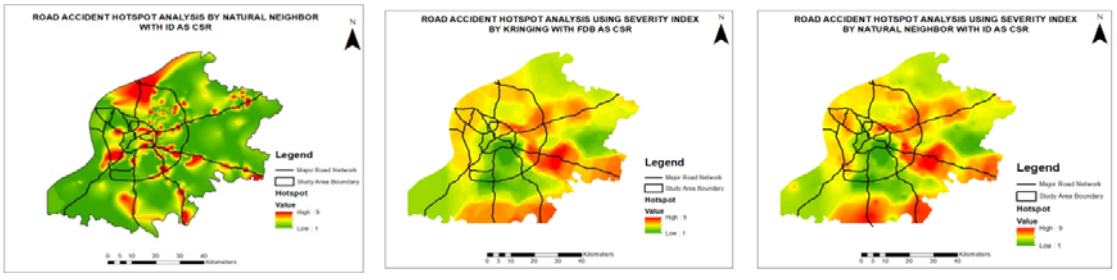
1. Road Traffic Accident Hot Analysis using spatial data mining with GIS as a supporting tool

   By VEMULA.ROOPIKA, BHEEMREDDYVALLA.SADAJA and LINGAM.SHIVA NISCHAL

Abstract:

Road traffic accident analysis using spatial data mining is the objective framed in the study. Accident analysis is achieved with black spot identification and interpolation through hot spot analysis. Black spot identification has been done with Accident count and an accident severity index. Accident count reflects the black spot having same geo-code whereas accident severity index represents the black spot having repetitive accidents at same location, number of fatal accidents, number of non-fatal accidents and the collision type of vehicles. Hot spot analysis is done by mapping clusters and interpolation. Spatial clustering is done using Getis -ord Gi* statistics. The input for the interpolation is given from z-score and Gi* statistics . Three interpolation methods with different CSRS's are determined. The interpolation methods include Kriging, IDW, NN. CSR tools include Fixed band and Inverse band. The interpolated data is used in reclassifying the image for ranking of hot spots. Statistical significance tests have been done to validate the correlated between interpolated data and black spot data. The correlation has been used to identify the appropriate method for hot spot analysis. Emergency centers were identified in the study area that can provide immediate response to the accident spots.

Results of hot spot analysis delineated various road stretches as well as intersections where hot spots were concentrated. Results indicated that the estimation of hot spots by K and Gi* using three conceptualization of spatial relationships (fixed distance band, inverse distance and inverse square distance) are widely similar. Hot spots evaluated using different severity weighing systems were found to be quite interesting. The results can be effectively utilized by various agencies for adopting better planning and management strategies for accident reduction as well as for improved traffic operating conditions.



2. Analogy of Ground Based Rainfall observations to satellite based observations from TRMM and GPM

By GUNTUPALLY.AARYAVARDHUN, A.ANURAGHAVA REDDY and P.HIMABINDU

Rainfall is one of the paramount factors for the global hydrological cycle and has large socio-economic impacts. Therefore, study of the rainfall becomes important. Generally, Rain gauge stations are used to find the intensity of rainfall. One of major issue is estimation of the rainfall at the ungauged stations or the remote areas where the installation of rain-gauge stations is not possible. Improved technical knowledge assists us to use satellite data to find precipitation. Our study focuses on preliminary analysis of the potential for using satellite derived rainfall data through a comparison with available gauge-based precipitation for Tungabhadra lower basin located in southern India. The rain gauge data from Andhra Pradesh and Karnataka meteorological department is collected and is compared with the National Aeronautics and Space missions Global Precipitation Measurement (GPM) and Tropical Rainfall Measuring Mission (TRMM) satellite-based precipitation data products. Tropical Rainfall Measuring Mission (TRMM) 3B42V7 and GPM satellites precipitation product offers an opportunity to monitor precipitation at high spatiotemporal resolution. However, it has several inherent errors related to observation, instrument, and rainfall retrieval algorithms. It is, therefore, essential to validate it with ground-based measurements. Different skill scores are computed for GPM and TRMM 3B42V7 data products to evaluate the performance of these satellite estimates. However, in terms of bias TRMM satellite has almost overestimated and GPM satellite has underestimated values when compared with ground rainfall observation also root mean square error values are high for TRMM observations when compared in an average with GPM observations. However, both TRMM and GPM products shows almost similar variations compared to ground rainfall observations.

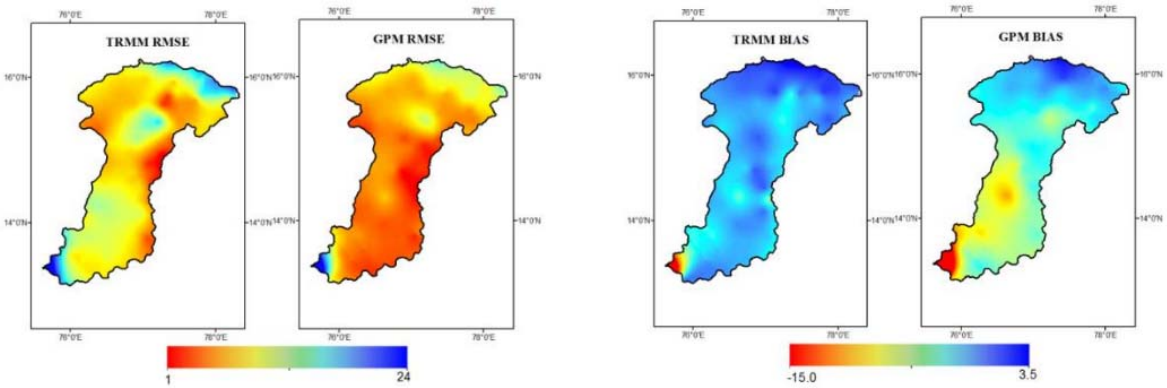


Figure 3: Spatial Distribution of Root Mean Square Error (RMSE) and BIASfor TRMM And GPM Satellites during July 2018 Over Tungabhadra Lower Sub Basin.

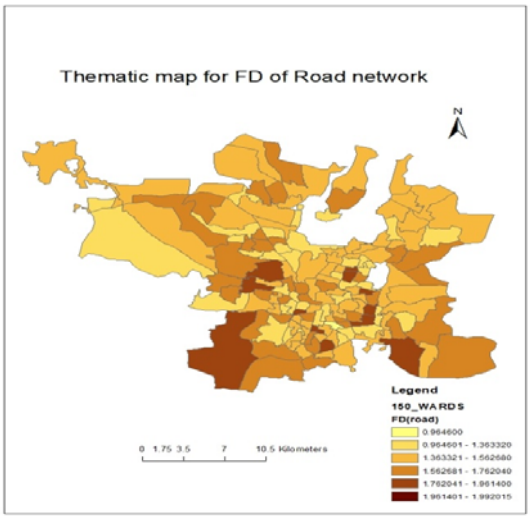
2017-18

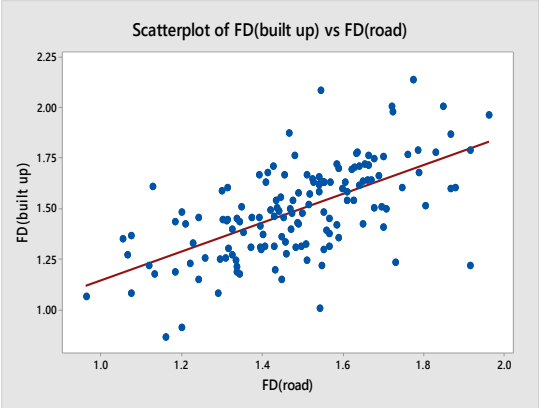
Spatial Analysis of Road Network Using GIS

By MOORTHY ANILA, PODUGU ANJALI, KATRAGADDA SATVIKA and V. SNEHITH REDDY

Abstract:

The complexity of urban form elements cannot be modelled well with the traditional and conventional indices of connectivity and accessibility. Literature suggests new developments in spatial evaluation of urban form through tools like fractal geometry. This study is based on application of fractal geometry to evaluate the urban form of Hyderabad city. The main finding of investigation of relationship between Fractal Geometry of urban form elements and the results showed that the correlation values is less between road length and built - up area with respect to space. This trend shows that there is a possibility to have lower relationship between built up area and road in future. This study suggests that this tool might be a tool for identification of deficiencies in existing urban form changes . This study applied box-counting method to describe the fractal property of urban transport system. With a case study of Hyderabad city, the analysis of the whole urban area as well as each of the urban zonal wards were carried out based on the box fractal dimension, which observed a weak correlation between the changing grid sizes and the changing numbers of the researching objects within their corresponding areas. Relational patterns have been used to make policy planning with respect to road development and settlement development. Accordingly, study showed the applicability of Fractal Geometry as an urban form evaluation tool through one case study application; further the research can be developed into used to study other city of the country.



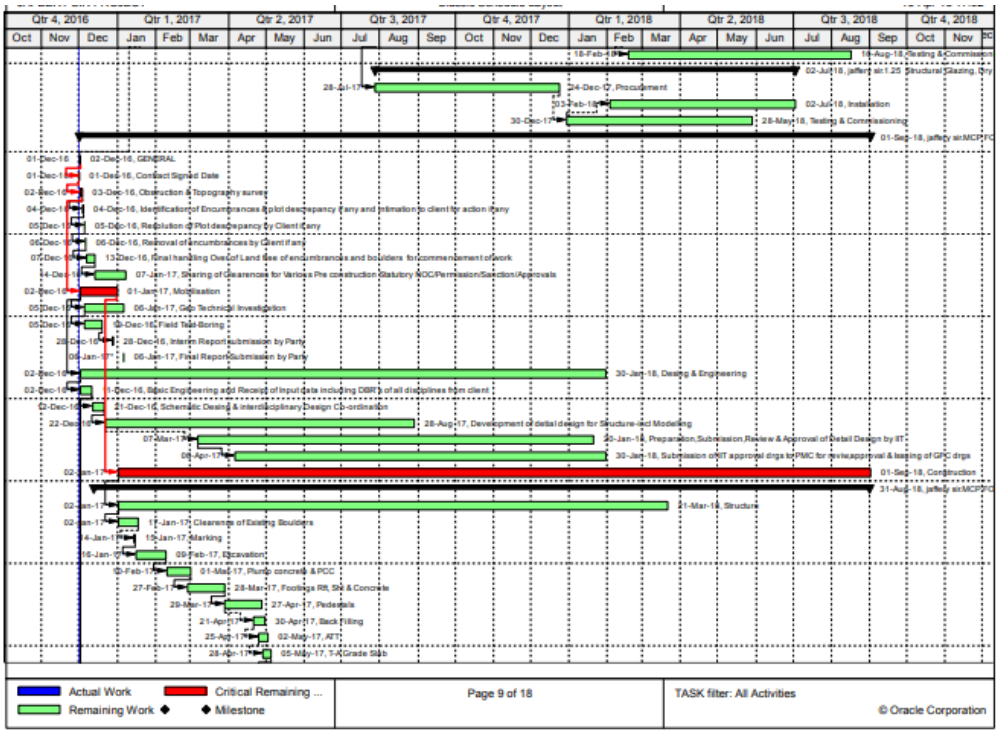


2017-18

2. Combating Complications In Construction By Critical Chain Project Management (CCPM) By ABDUL WASAE SYED, KOTA MANIDEEP REDDY and THOTA SAMANVITA

Abstract :

The study is carried out at the construction site of 'Telangana Police Central Command, Banjara Hills, Hyderabad' commissioned by the 'Roads & Buildings Department, Telanagana' to contractors 'Shapoorji-Pallonji Private Limited' and 'Larsen & Toubro' and Project Management Consultants 'Voyants Solutions Private Limited'. The project focuses on how project workers within an organization resist the paradigm of CCPM. It includes a different perspective from other studies available. The research question includes: "What causes project workers to resist working according to the principles of Critical Chain Project Management?" CCPM combats the human elements of task delay, leads to a change in the organization, and changes the way project workers fulfill their work. The project also includes grading of risks and uncertainties at the site, by contributing to deeper insight and awareness of the elements of resistance that exist in construction environments. That knowledge combined will be used to manage the project by 'Oracle's Primavera P6'. The expert review functions as a starting point of comparison to the broader context of CCPM appears on many points affirmative. Generally, implementations of CCPM go reasonably well. Initial skepticism exists but does not appear detrimental. Organizations appear well capable of integrating CCPM processes.

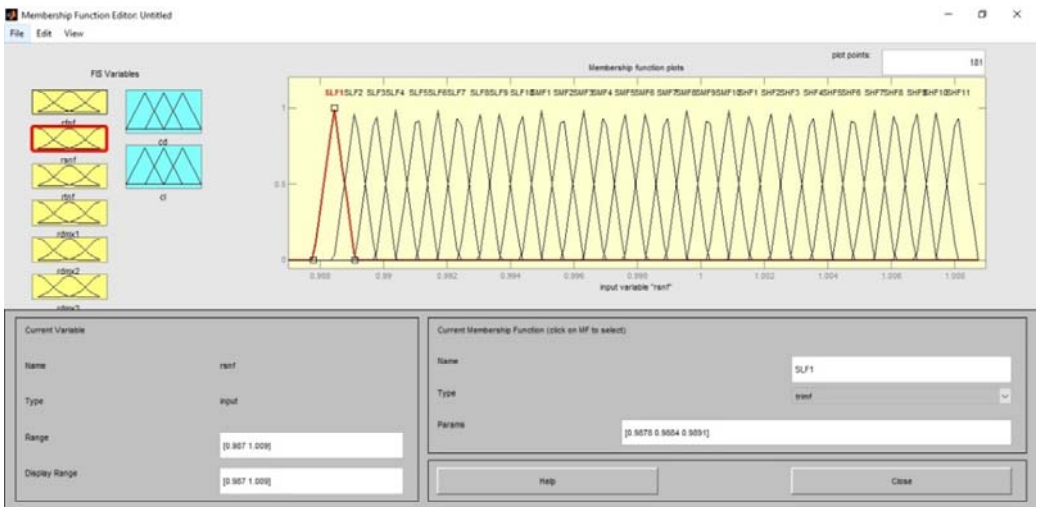


2015-16

Damage Detection in Beams using Wavelet Analysis By VOLETI SAI ANOOP ADITYA, DANNANA SRAVYA and SIRIPURAM SRINATH

This work investigates effect of single damage in vibrating structural members using the dynamic response of the system. Changes in the loading patterns, deteriorates the structure with time. Influence of environment may cause cracks in the structure, especially in engineering structures which are designed for prolonged life. Hence early detection of the presence of any kind of damage can prevent the sudden failure of the structures by correctly monitoring the response of the system. In recent times condition monitoring of structural systems has attracted scientists and researchers to develop online damage detection tools. Primarily, the structural health monitoring technique utilizes the methodology for damage detection using the monitored vibrational parameters.

In the current analysis, special attention has been made on those methods which are capable of detecting single crack present in the system by comparing the information from damaged and undamaged state of the structure. In the current investigation, methodologies have been developed for damage detection of cracked cantilever beam, fixed beam like structure (flat), and steel joist (I-sections) with single crack using Fuzzy Logic and Wavelet Analysis with considerable amount of accuracy and low computational time.



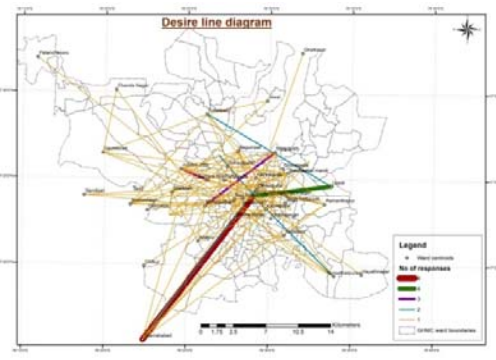
2015-16

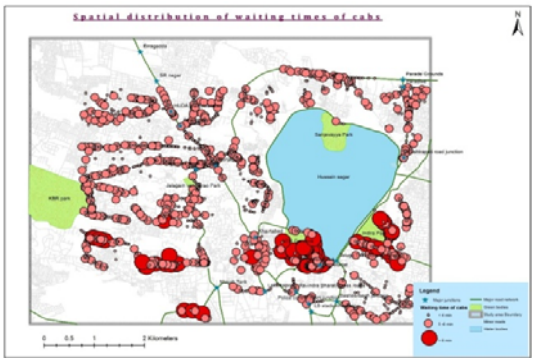
2. Impact Assessment of Intermediate Para Transit (private cabs) on Hyderabad City Transport

By ABHI MUKESH SHRIVAS, MALLIGONDA ABHILESH , AEDDLA SHASHANK and N VISHWAPRIYATHAM

Abstract

Urban mobility has been a key ingredient in country's growth and hence the drive of Smart cities is initiated by the government as a technology driven tool for sustainable development from transportation perspective. In urban fabric, on demand ride services such as Uber, Ola, Taxi for Sure, Meeru or "ridesourcing" has prompted a change in the travel patterns among the urban dwellers thus causing a drift in urban mobility. At present, ridesourcing's usage and impact are not well understood and documented. Key questions include: how ridesourcing and other modes compare with respect to trip types, customers, and locations served; whether ridesourcing complements or competes with public transit; and potential impacts on road users and urban mobility .An attempt is made in this study to address these questions by evolving an approach for impact assessment. The study develops a causal model for prediction of cab usage with respect to user preferences and socio-demographic characteristics. The findings indicate ridesourcing serves a previously unmet demand for convenient, point-to-point urban travel. Although all other intermediate para-transit and ridesourcing share similarities, the findings show differences in users and the user experience. Ridesourcing wait times are markedly shorter and more consistent than those of all other modes, while ridesourcing users tend to be younger, own fewer vehicles and more frequently travel alone. Ridesourcing, like autos, appears to both substitute for and complement public transit; the majority of ridesourcing trips would have taken substantially longer if made by public transit. Impacts on overall vehicle travel are unclear. Future research should build on this exploratory study to further understand impacts of ridesourcing on labor, social equity, the environment, and public policy.



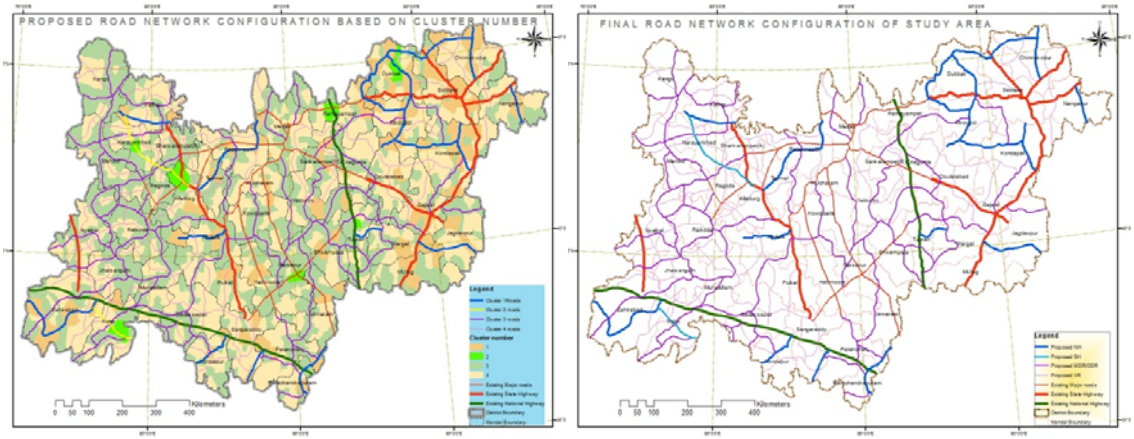


2014-15

Sustainable Rural Road Network Planning with a Balance of Urban and Rural Development

By GAYATHRI SRI BRUNDAVANAM, GOVIND DIVYA, SRUNGARAPU RENUKA, and VANGALA NAVYA

Abstract: Rural Road Connectivity is not only a key component of Rural Development by promoting access to economic and social services and thereby generating increased agricultural incomes and productive employment opportunities in India, it is also as a result, a key ingredient in ensuring sustainable poverty reduction. Rural roads are often considered as an entry point for poverty alleviation and employment generation. Rural Connectivity is achieved in different levels of hierarchy through a traditional hierarchical structure – National Highways, State Highways, Major District Roads, Other District roads and Village roads for achieving a long term objective of adequate road communication in India. The policies for connectivity of villages are followed mainly by population criteria . The connectivity through hierarchy is to be planned from the travel behaviour and activity generation, which depends on various profiles like demographic, socio – economic profiles, facility profile and the impedance values. The existing research work in the area of planning is limited to modification and upgradation of the existing planning approaches already developed . Many planning models and approaches were based on network equilibrium but less importance was given to network orientation based on the demand potential. This methodology proposes a strategic model that characterizes the varying profiles in an area and accounts the demand based on these profiles. An integrated model based on clustering analysis and GIS has been formulated for assessing the demand potential and thereby giving an orientation to a hierarchal rural road network configuration. This promises to be scientific tool as it was validated with the existing higher order road network such as National and State highways in the region. The study has been attempted on Medak district of Telangana state



2014-15

2. Stabilization of Expansive Soils for Pavement using Granite Dust and Ceramic Waste

By AHMAD SEAR SULTANI, G. KAMALAASAN, NOOR AHMAD SHIRZAD, N. SRIRAM REDDY and GUGULOTH PAVAN

ABSTRACT

Clay is a naturally occurring material composed primarily of fine grained minerals, which shows plasticity property through a variable range of water content and which can be hardened when dried and/or fired. Soft clay soil which has low bearing capacity and large settlements that take place for long periods of time. Expansive soils occur all over the world and in India too where these are known as Black cotton soils. They cover nearly 1/3rd the area of the country. Expansive soils are synonymous to problematic soils in Civil engineering construction because of their swelling characteristics. Expansive soils provides civil engineers with a formidable challenge as the soils heave or swell in the presence of moisture and shrink or settle on drying which means heaving in the monsoon and settling in the summer. This cyclic change in volume is extremely difficult to deal with. Though many forms of stabilization exists but the challenge for the civil engineering community in the near future will be realize the projects in harmony with the concept of sustainable development and that involves the use of high performance materials produced at reasonable costs with the lowest possible environmental impact. In the view of global sustainable development and emphasis on environmental conditions, it is imperative that supplementary stabilizing materials like FLY ASH, POND ASH, GGBS, RECORN FIBRES etc., are to be used. In this study, an attempt has been made to stabilize the soft clayey soil by using GRANITE DUST and CERAMIC WASTE with 5-25% .