Research Article

Eco Conservation and Development of Tourism along Yelagiri Hills Using View shed Analysis of Geographical Information System

K Gobinath[1], P Ravikumar[2], G Bhaskaran[3], V Chandrasekar [4]

Abstract

Yelagiri hills, Tamilnadu is a famous tourist place in India as a part of eco-tourism. This area receives many tourists across globe throughout the year. In recent years environment is a major concern in Yelagiri hills since increase in the number of tourist. The area is getting vulnerable due to waste generated by the tourist when they are traveling across the greenery part of the hill slopes for sightseeing. In the present study View shed Analysis methodology of Geographical Information System has been used to identify the range of Environmental, Socio and Economic Issus along Yelagiri hills. View shed analysis is a new method based on 3D data sphere that is used to visualize and analyze the result based on 3D virtual earth system. This tool can be regarded as provider of techniques to apply and achieve the tourism planning, conservation and development in a while. This study identifies the view shed points along Yelagiri hills for tourists to view more sights from a location. This helps the tourists to reduce their travelling for sightseeing. The amount of waste generated on the greenery environment is also getting reduced since the close contact of tourists with the spot has been reduced. So it helps in the protection of environment. After identifying the view shed points the planning has been done to develop the same to provide the all the facilities for the tourists in one. It helps the tourists to stay in a place and enjoy the nature with minimum cast of traveling. It saves not only the environment but also valuable time and money of tourists. So they can spend their time and money in other ways of entertainments that has been identified for tourists without disturbing the nature with the help of government and non-governmental organizations. It gives an opportunity to local people to generate employment and improving their economy. As conclusion view shed maps has been prepared for Yelagiri hills to protect the environment and natural resources and develop the tourism without affecting the nature.

Keywords: View shed, 3D visual, GIS

Introduction

Yelagiri hills are part of Javadi hills of the Eastern Ghats. It is very beautiful and has rich natural wealth along the right side of Chennai-Coimbatore railway track and also NH connecting Bangaluru and Chennai on the other hand. The Ghats Section has medium length about 14 km Stretch and there are 14 hairpin bends leads to the hill top. Yelagiri and Javadi hills are main part of the Sathiyamangalam Forest which stretches up to Mysore in Karnataka. It covers 60% of area of the hill, mainly sandal woods.

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The Nilavur, 6 km from the Athavanur, is one of the park cum boating house in Yelagiri hills. It's mostly covered and connects to the Coimbatore – Chennai and other States of India. In November to February months are very high condition of the Hills Station the total 30km are covered fully Forest and Plantation areas. The Government to take the action for expends of ponds and creates the idealist view points and rope car facilities. In this report to use and to create the Viewpoints and it's based on the Tourist Planning.

Tourism is most complex and development of the Socio and Economical condition of the Society. This present events reach a commercial and enjoy full level in the developed and developing countries. Hence all over the developing countries, in the recent years the preparation of the tourism developments and forest management has become more interacted by the science societies of Geographers and Geoscientist and Engineers and Administrative community of Government and private sectors.

There are three fundamental concepts for the tourism development and forest management system.

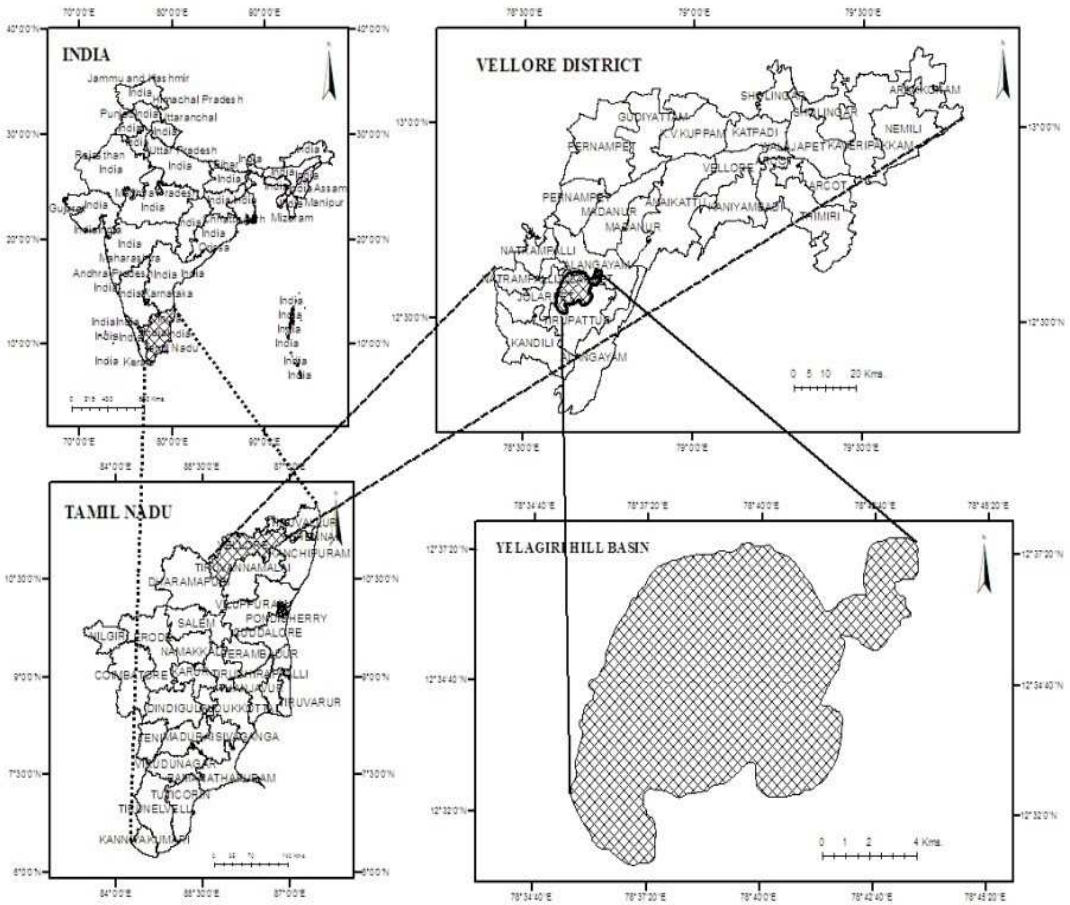
(i) To create and plan the new view points of the hills areas, and to provide in the past tourist places.
(ii) Don't disrobe the Natural Resources and any constriction of Manmade Resources (e.g) Road, Building, etc.
(iii) To product the Natural and Forest resources.

Tourism and forest management are prepared on the basis of view shed analysis based on the Mathematical and Statistical methods. The mathematical methods consist of viewpoints to target location with Geotechnical concepts. The Statistical methods are followed two types (i) Quantitative (ii) Qualitative methods

Study Area

In this study area are situated in Vellore district. It's covered to a small western part of the area. The major road NH, SH are connect to town to village. The road cut are founded in gentle slope by the step by step wise. Most of the places hear bin bend are founded. The Geographical location of 78°36'0"E to 78°42'0"E Longitude to 12°36'0"N to 12°33'0"N Latitude. The total area covered about 30 sq.km. it is one of the Western Ghats Section . So the humidity high and total Rainfall is 3500mm of the study area.

Yelagiri one of the famous tourist places in the Javadi hills in Eastern Ghats Section part of the Tamilnadu. Mostly tamilnadu people and neibouring state of karnadaka people to enjoy the climatically conditions. The jalagamparai water falls are increased peaceful of the climatic and enjoyable touristers. On the other hand in this nearest places are fully covered various herbal plants and other medicine plants. The center part of the Yelagiri Hills is covered a peaceful tourist place on Punganoor Lake and Boating House. The total area in the lake is 56 sq.m. In this Lake Carried out the Boating, additional enjoyable palce for Children Gardan, it's located inside of the Yelagiri Hills. In this place to enjoy Kids and Families. In lake nearest place Herbal Planetarium are founded. Most of the herbals and other medicine plants are cultivated. Most of the places gentle slopes are there so the tracking of the walk is very interesting for the tourist people. In these times to see the Valley and waterfall and peak viewpoints etc,. The entrance of the Road Ghats Section to create the telescope view of the full Yelagiri basin, it's give the beautiful and Greeniseable picture of the Yelagiri basin. The cultural phonomenas are founded in this place for Velavan temple.it is one of the another enjoyable place in yelagiri. In this region to flow the main river for Attaru to the direction of West to East direction. It give the drinking water around of the nearst villages and towns. dring purpose



Data Base Used

The View shed analysis are rectified the basic information of (SOI) Survey of Toposheet 57L10(1:50000 scale). It should be generate the Spot Heights, Contour, Slope, Aspects maps. The Trimble Juno Serious GPS (Global Position System) derived the view points and to analysed Geographycial Tool of GIS and ERDAS, and Golden Software Surfer. The Major three software to generate the 3D View of study area, Slope, Aspects, View shed, Contour, Road map. The clinometers methods are adopted and followed to finalizing the view points of the study area Points for the study area.

Methodology

In Viewshed Analysis was carried and followed by the major three steps. The first one is data collection, it's one of the major parts in research work, the data should be gathered in Governmental and private agencies are collected and to analysis and give the final result. The data like physical element of Spot Heights, Contour, Slope maps are taken form survey of India Toposheet like 57L10 by scanning and georeferencing and using Geographical tool of GIS. The second data know as field collection of data. The Trimble GPS take the different places in various points, that points which are one of the best points are selected and to put the GIS software to prepare the Location Map. The 3D maps are derived in ERDAS software, it generates and to give the Spot Heights Points in different values and to get the 3D view maps. It is used to which place are highly elevated, and which place are satisfied the view location to identified the 3D maps. The Third part of data collection known as field verification to take the prepared maps and finalizing data to check the extensive part of field visit. In this work used to main software's known as Arc Map9.3, ERDAS, and Golden software for Surfer. It is shown in the figure.

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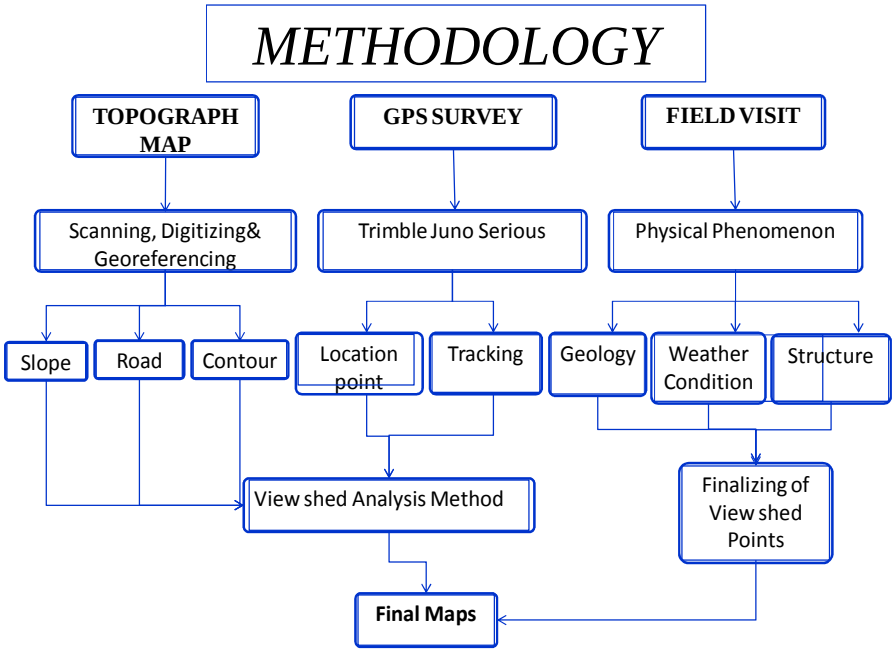


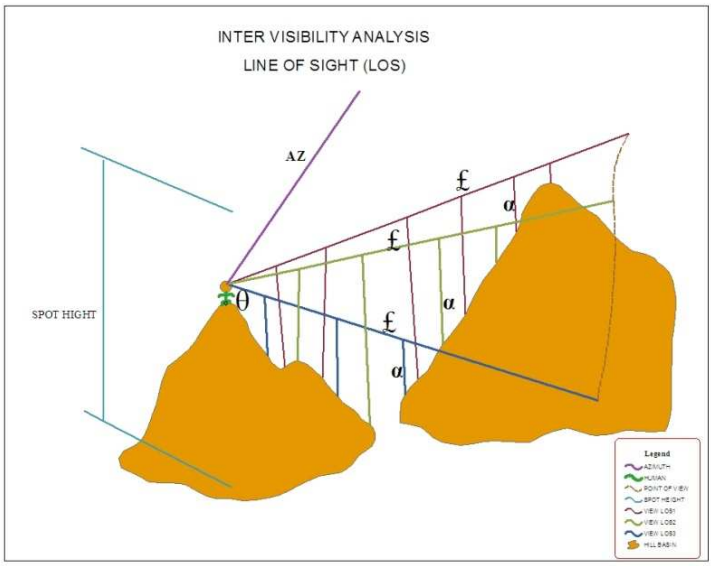
View shed Analysis

The present study and it can be used the Inter visibility Analysis simply relate to the classification of weather Five location for the line of sight and invisible of line of sight. It should be centered and considered the visible or view shed observed point. It has come under closely securing in the recent year (Fisher 1993, Huss and Bumer1997). In this method to termained in two ways first to retrieving the crass – sectional terrain profile, otherwise stopping through the Digital Terrain Model (DTM) and other associated topographic databases, or Digital Surface Model (DSM), to identify any possible obstructions between the observers to target locations. In each elevation is interpolated from the DTM and DSM, the angle subtended from it to the angle subtended to the observer form the target. Know the surface extended above the line of joining the observer to target is $\alpha > \theta$, the profile to create and classified as NLOS. If the search surface extractions intersect this line then the observer and target are inter visible or line of sight. In past years, current implementations within GIS have profound shortcomings in their ability to yield useful and relished answers to simple quires are related to the view shed area (Fisher 1996). In the study area view shed of an observer is not nasality the same as the area that can view the observer's location as the distinction needs to the made between the ground and viewing heights know the tools are fairly limited for quantifying the degree of visibility of surface object. For example

Inter visibility analysis

The present study area using the inter visibility analysis area amongst the common and general function of GIS that support digital terrain modeling. It's used to aid planning decision and it deals for identify location which maximum the field of view, it can be applicable for another area of broad cost converges; silence viewpoints watch towers and missile defenses (Franglin and Ray 1994). In this method function for require the computation of visibility for the surface otherwise object located on the surface. In this study main problem is essentially a query problem (Magillo 1999). It's represent the key to solving such problem is the availability of flexible modeling strategies for the representation of the surface itself and it's prepare to multiple capes and for the objects on the surface now the study to deals the documented that small elevation error can propagate through the to large application error, particularly the present study (Fisher 1991, Huss and Pumer 1997). It is nothing but commercial software available and to delegate the query the surface on issues of visibility are often in avoid and contradictory (Fisher 1993). And its deals to number of factors, including elevation errors is digital terrain model (DTM), and the in accuracy and miss representation of the surface features. Interpolation errors, resolution of DTM, and last one of poor inter visibility algorithms, these are all the problems are compounded by a reluctance to validate the performance of DTM, topographical model for the purpose of model for probably of visibility analysis with actual fixed visit.

Know the recent study have attempt the inter visibility and sensitive functions are small database error, know a day's GIS developers to develop the board these tool, preparing to classify and visualizes inter visibility as a defininative Boolean variable for visible or in visible, the reasoning in variability algorithms leaves on room of error, particular geo family are high level accept that the digital terrain model error is inter visible.

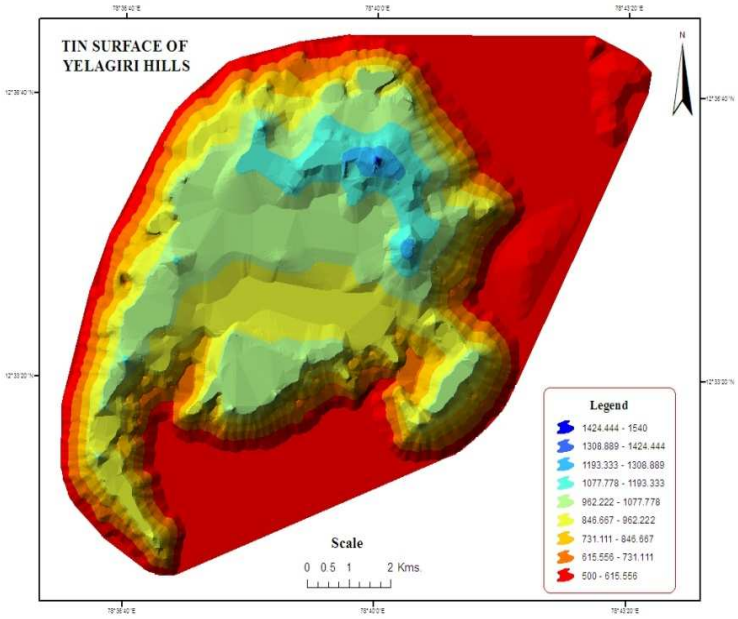


View point = Line of Sight/ Elevation of the Terrain

- **£** - Line of Sight
- **θ** - View Point Observer
- **α** - Elevation of the Terrain
- **AZ** - Azimuth

Inter Visibility Analysis in TIN and DEM

TIN known as Terrain Irrugulated Network it determining inter visibility of TIN for straight forward as the DEM Creation. The TIN, DEM are requires more complex algorithms of manipulate the exploring defined topology (Theobld 1989). Know the simplest task is to calculate the visibility between the observer targets. The visible of maximum and minimum of the target area are required to the main software for GIS. Know the DEM and TIN using the interpolating elevations along the profile cross section. Normally a regular stepping algorithm combined with a boucle interpolation algorithm is advisable as this will identify the variation within the gird cell.



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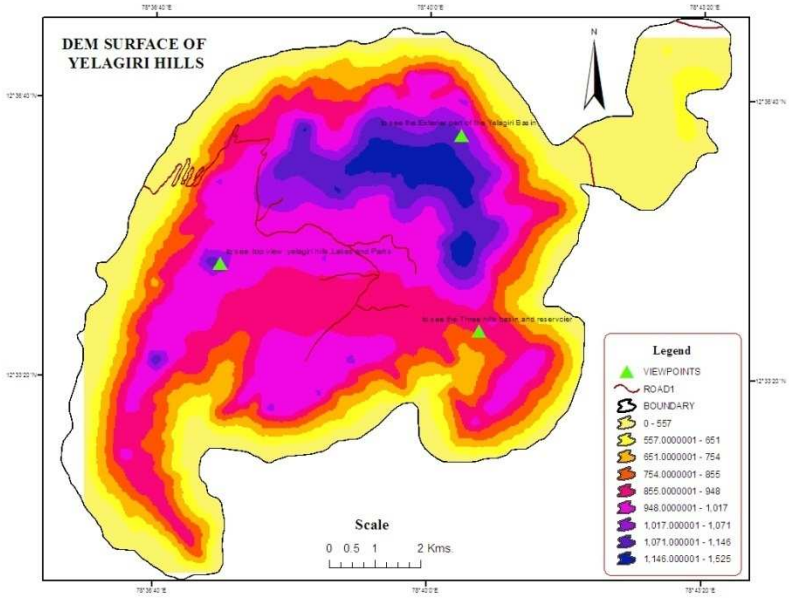
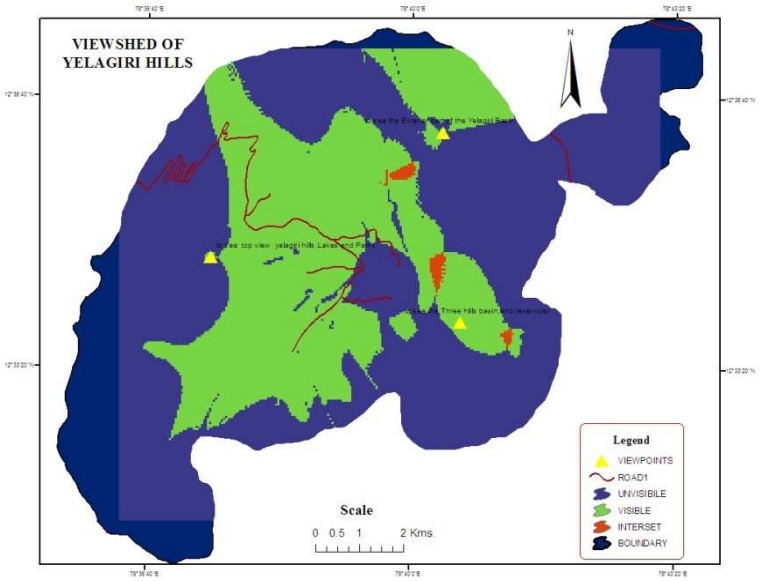
TIN considered many ways but the study deals for linear interpolation, there are two types of interpolation (i) linear Interpolation (ii)bivariate interpolation method. Most of the applicable system and method for linear interpolation method. In this method to give the most inter visibility algorithms.



GIS Application and the Tourism Industry

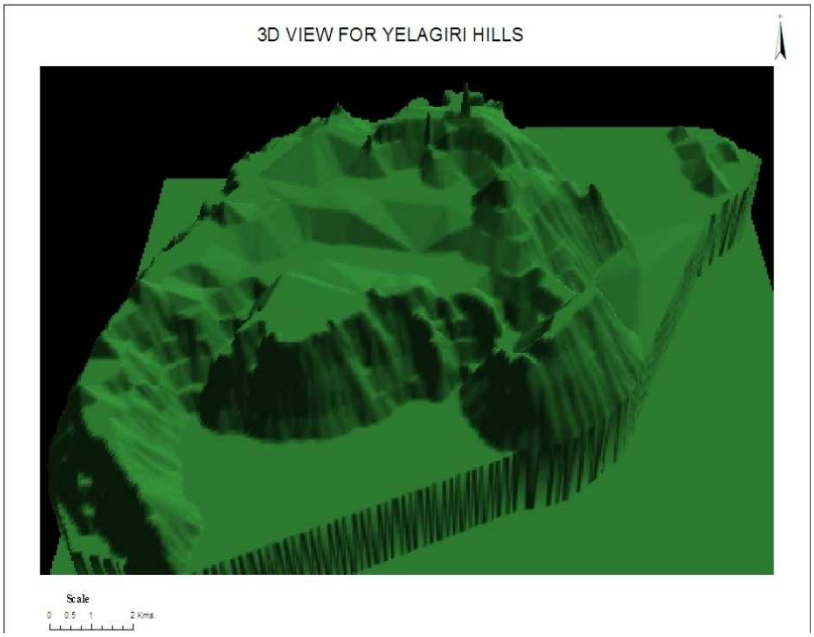
Geographical Information System applicable to all the fields in present and feature days. It's can be used multiple of disciplines and inverts were as (Coles, 2003) many others industries are apply delineate and get the good result of the software. Geographers and Geology, Environmental Science, Planning ect. On the other hand it's recognized as preceding an efficient tool for managing, analyzing and visibility of the spatial datasets for various planning and Environmental Sceneries. Tourism planning is depending on identified there sceneries to achieve the tourism development for example, in southern India best tourist place in Otty to plane the rob car facilities soon to constrict and planning and environmental construes of the following criteria.



- To avoid the Spatial constraints such as noise and visual assessment
- To avoid the transport traffic on the palce.
- To product the Eco conservation system
- To avoid the wild life animals disturbing for human activities.

GIS technology, were as inter visibility analysis could considered to visible portion of the study area and to

avoid the Invisible places and to cover the all over the study area. It can be used two main purpose, one is to develop the tourism development another one is Forest Forecasting of the view point to watch the Environmental degraded activates. Know the present day GIS applicable for tourism based land management, visitors impact assessment, recreation wild life conflicts, tourism information system and other schools and departments (Giles 2003), on the other hand present day to give many projects based on the tourism related projects such as soil erosion, landslide and sustainable development, Geological based for rock exploration, rock structure and terrain displacement etc.,



Topic of Master Themes resulting from the study area

- To create the Point of View to the study area to get the peaceful of sceneries.
- First point location to see the opposite or yelagiri hills basin and the Lake and the potannicaial Garden.
- Second point to see the outer portion of the yelagiri basin mainly using the eco production for the forest range and forest department,
- Third point to see the Remote sensing View of Exterier part of the village and Vellore district.
- These are all the three points to product the eco conservation system, and peaceful and enjoyable tourist part of the region.

Results and Discussion

The different thematic maps are prepared and to finalize the view shed the different viewpoints of three thematic maps were added and three different viewshed mapping were created. Based on the primitive thematic layer, all these three points were representing the different places. Inter visibility analysis of all these three points was prepared by the various maps. The resultant view shed Map are generated and then re-classified the Erdas,and ArcGIS software's.

Conclusion

In this study to deals with a considered the application of the multiscale implicit TIN to the problem of determining surface inter visibility. Know the present day view shed function has been a popular GIS Tool over the last twenty years. All the people hopeful that users will be and analysis the particular data, weather preferments and flexibility of the existing data model.

Our theory to suggest that this analysis and finalized three viewpoints are very useful and to product the Eco conservation System. on the other hand to develop the tourism with guide of forest resources. In benefiting yelagiri is one of the best tourist places on the Tamil Nadu.

The basic construct to take after the Government and other Private Sectors. Know a days the real-estate, private Hotels are occupied the hills and other place for basin areas, but the government to take the action about to avoid the new constriction of Roadway to product the foot hills of the area to construct the building and real estate.

We have documented new fact about the View shed Analysis to create a new Tourist spots and to find the Forest degradation and other activities.

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