

IMPLEMENTATION RESULTS OF SEARCH PHOTO AND TOPOGRAPHIC INFORMATION RETRIEVAL AT A LOCATION

¹Sukhwant Kaur, ²Sandhya Pati, ³Trupti Lotlikar, ⁴Cheryl R, ⁵Jagdish T., ⁶Abhijeet D.

¹Sr. Lecturer, Deptt. of Computer Engineering, Manipal University, Dubai

^{2&3}Asstt. Prof., Deptt. of Computer Engg., Fr.CRIT, Vashi, Navi Mumbai, Maharashtra, India

^{4,5,6}Deptt. of Computer Engineering, Fr.CRIT, Vashi, Navi Mumbai, Maharashtra, India

ABSTRACT

Tourism is the strongest and largest industry in the global economy. It has played a significant role in boosting the city's economy and social employment. There has been a large increase in the number of people out on tours, for the sake of recreation and entertainment. In the traditional tourism industry, tourist information is obtained mainly through newspaper, magazines, friends and other simple ways. . Such traditional sources are user-friendly but, they have some serious limitations. First, the suggestions from friends are limited to those places they have visited before. Second, the information from travel agencies is sometime biased since agents tend to recommend businesses they are associated with. Moreover, information available from the Internet is too overwhelming and the users have to spend a long time finding those that they are interested in. Thus, trying to eliminate this difficulty SPATIAL employs geo-tagged images to show the interesting scenes of different places. Detailed texts, images, paths and other guidance information are provided, so people can better understand the tourist attractions and make their decision objectively.

In this paper, we present the successful implementation of a photo and topographic information search. A user can provide a desired keyword describing the place of interest, and the system will look into its database for places that share the visual characteristics. One can select two locations on the map; the latitude, longitude of the selected area, the path and the distance between the two places would appear. Then from the multiple paths, user can select either path and images of famous places would be displayed. These images are broadly classified into categories such as holy places, universities, historical monuments, nature-driven places and wildlife. One can also see the detailed information of the selected place as well as of the selected image.

KEYWORDS – Latitude, Longitude, Path, Tourist Place

I. INTRODUCTION

The system 'Search Photo And Topographic Information At A Location- SPATIAL' is an application where in the user can provide a desired keyword describing the place of interest, and the system will look into its database for places that share the visual characteristics. From the country India, on selection of two locations in a particular state; the latitude and longitude of the selected place, the path or multiple paths and the distance between the two places would appear. On selection of a particular path, images of famous places would be displayed. We have broadly classified these images into the categories such as holy places, universities, historical monuments, nature-driven places and wildlife. We can also see the detailed information of the selected place as well as of the selected image.

There is an Administrator Control Panel in which the only the administrator has the access rights to add a region, city, images and their description as well as edit the same. He can also define paths between various cities and edit or delete the same.

The system named 'SPATIAL' which is an abbreviated form of Search Photo and Topographic Information at a Location. In this project, in order to get started, click two locations on the map displayed to define the geographical area for which image results should appear. When you click on the map for a location, respective latitude and longitude information is automatically entered in the boxes displayed.

The search can further be refined by using specific search based on the different image categories like holy places, historical monuments, nature-driven places, universities, wild life. Thus, a collection of interesting images that contains both user-tags and geolocations are needed [2].

The features of the system 'SPATIAL' are as follows [3]:

- i) It provides detailed information about the image and its location.
- ii) It provides the user with more efficient and easy ways to find tourism recommendations which can save time and efforts.
- iii) It suggests tourist destinations based on his/her interest.
- iv) Latitude, Longitude, multiple paths and distance between the selected locations will be displayed.

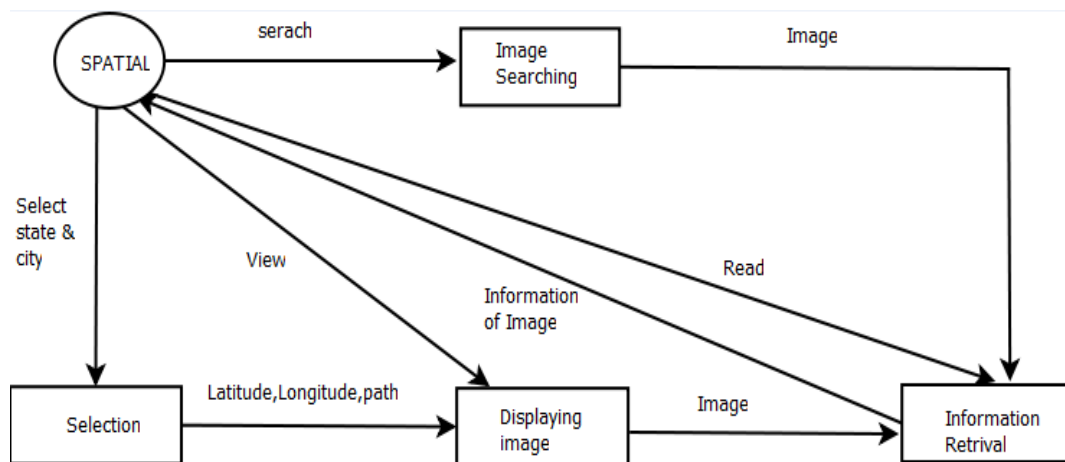


Figure 1: Design of software

In order to fulfill the criterions, the system is divided into the following modules as shown in Figure 1.

1.1 Module 1 (Selection).

1.2 Module 2 (Displaying Images).

1.3 Module 3 (Image Processing and Image Search)

1.4 Module 4 (Information Retrieval).

The detailed descriptions of these modules are as follows:

1.1 Module 1 (Selection)

In Module 1, SPATIAL provides the user the ability to switch between Interstate and Intrastate. Interstate comprises of South India which includes traversing among the states Karnataka, Kerala, Tamil Nadu and Andhra Pradesh. Also, in Intrastate, we have limited it to Maharashtra and Uttar Pradesh. One can select two locations on the map; the latitude, longitude of the selected place; distance between the two places would appear.

1.2 Module 2 (Displaying Images)

From the selected points, multiple paths are displayed and all famous or user-desired images appear. User-desired images include temples, historical places, nature driven places, universities, wild life and other famous places. Moreover, the displaying of images comprises of the following:

- i. Air Route - A line is drawn connecting the two location points and images would be displayed. A route that would appear as a straight line on the map would actually be shorter than the original distance between the two locations.

- ii. Rail Route – This is based on the rail network within the particular location. Depending on the rail network for the selected location, the associated path would appear on the map. Then, all famous or user-desired images would be displayed.
- iii. Road Route – The exact road route would appear between the two selected locations. Images of all well-known places like temples, beaches, monuments; etc that is present on that route would be displayed.

In order to reach the location of famous places, road route would be efficient. Hence, we have displayed images of such places according to the road route.

1.3 Module 3 (Image Processing and Image Searching)

Image Processing - Here, we have performed image enlargement on the selected image. Search of specific images based on the category in the map is thus possible. For example, we can display all temples in specific area.

1.4 Module 4 (Image Information Retrieval)

Image and Location Information- All information about image and its location is displayed to the user. Such information includes distance calculation by road route, details about the places worth visiting in that location. It is a basic form of information retrieval. This will help users, especially tourists, to know about that tourist spot.

II. IMPLEMENTATION ISSUES

There are few issues which encountered while implementing the project. They are listed as follows:

2.1. Language of Implementation

To develop a web application, different tools are available such as ASP.NET, PHP etc. We have implemented our project in ASP.NET because ASP.NET is a web application framework developed and marketed by Microsoft to allow programmers to build dynamic web sites, web applications and web services. ASP.NET makes development simpler and easier to maintain with an event-driven, server-side programming model [7]. The connectivity of ASP.NET with SQL Server is also very fast, secure, and it can store extremely large amounts of data. We have used jQuery for scripting because jQuery is fast and concise JavaScript Library that simplifies HTML document traversing, event handling, and animating and Ajax interactions for rapid web development [8].

2.2. Database Considerations

In order to enable tourists to know about the famous places in a particular area, it was necessary that we obtain the images from the database.

Here, we have faced the following cases:-

i) What type of database to be used?

SQL database are designed and optimized to run with large amounts of records from a database quickly and efficiently. With the help of simple SQL queries, one can retrieve complex information from millions of records. Storing data in a SQL database is more secure [9].

ii) What will be stored in the database?

In database the relative path of images are stored according to the image categories.

iii) How are the images and information retrieved?

Images are retrieved by writing query in a SQL server.

2.3. Ease in Image Searching

Tourists desire more efficient ways to find tourism recommendations which can save time and efforts. In case they want to see specific images in particular locations then searching will take too much time. For this purpose, we have stored images by their categories so that searching of specific category like temples, nature-driven places etc. will be easy.

III. IMPLEMENTATION LIBRARIES

There were two libraries which were being used in implementing the project. The two libraries are discussed below:

3.1 Scalable Vector Graphics (SVG)

Scalable Vector Graphics is a family of specifications of an XML-based file format for describing two-dimensional vector graphics, both static and dynamic (i.e. interactive or animated). SVG images and their behaviors are defined in XML text files. This means that they can be searched, indexed, scripted and, if required, compressed. Since they are XML files, SVG images can be created and edited with any text editor, but drawing programs are also available that supports SVG file formats.

We have used the SVG 1.1 specification which defines certain important functional areas or feature sets such as Paths, Basic Shapes, Text, Colour, Interactivity, Linking, Scripting, Animation and Fonts.

3.2 jQuery

jQuery is a cross-browser JavaScript library designed to simplify the client-side scripting of HTML. The jQuery library can be added to a web page with a single line of markup. jQuery is a library of JavaScript Functions. jQuery's syntax is designed to navigate a document, select DOM elements, create animations, handle events, and develop Ajax applications. jQuery also provides capabilities for developers to create plugins on top of the JavaScript library. Using these facilities, developers are able to create abstractions for low-level interaction and animation, advanced effects and high-level, themeable widgets. This contributes to the creation of powerful and dynamic web pages [6].

jQuery contains the following features:

- i. DOM element selections using the cross-browser open source selector engine Sizzle, a spin-off out of the jQuery project
- ii. DOM traversal and modification (including support for CSS 1-3)
- iii. Events
- iv. CSS manipulation
- v. Effects and animations
- vi. Ajax
- vii. Extensibility through plug-ins
- viii. Utilities - such as browser version and the each function.
- ix. Cross-browser support

The jQuery library is stored a single JavaScript file, containing all the jQuery functions. It can be added to a web page.

IV. IMPLEMENTATION SCREENSHOTS

The figure 2 shows the Home page where in the user is able to get an overview of SPATIAL. The Home page also consists of a brief view of hot spots and the image gallery. From this home page, the user can choose his navigation via Interstate or Intrastate. The Interstate navigation mainly deals with South India.



Figure 2: Home Page

Figure 3 gives the overview of all the images stored in the image gallery. The images in the image gallery have been broadly classified into categories such as holy places, universities, historical monuments, nature-driven places and wildlife. On moving the mouse over a particular image, the detailed information of that image will appear as shown in the figure below.



Figure 3: Image Gallery

In the Intrastate navigation, the user can select two locations, that is, a source and a destination in a particular state. Thereby the latitude, longitude, city details and the available multiple paths between the two locations will be displayed. On selection of a particular path, images of famous places would appear as shown in figure 4.

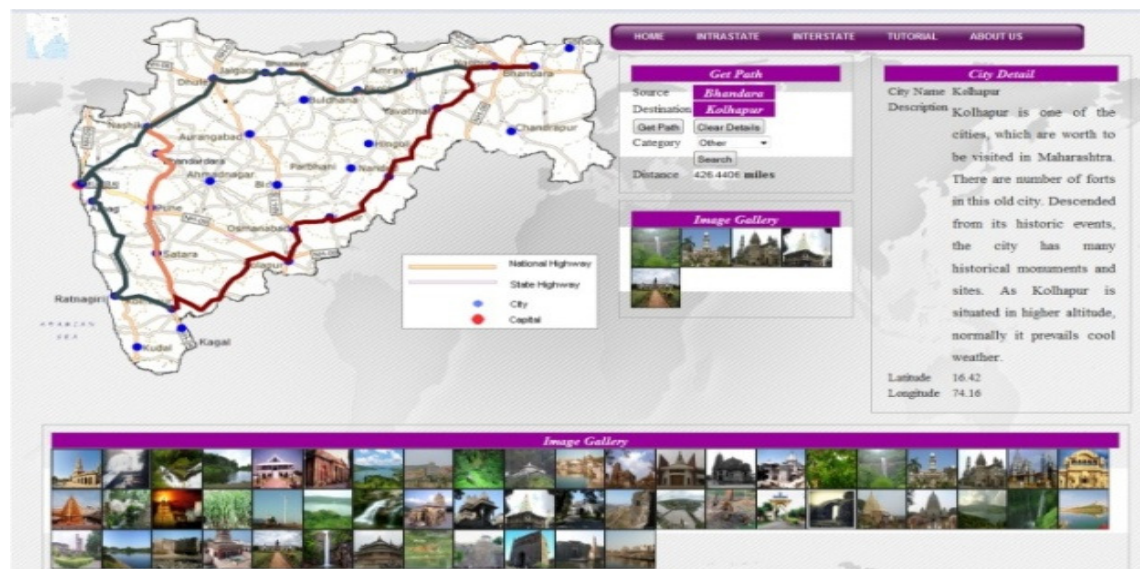


Figure 4: Overview of Intrastate

The Interstate navigation consists of traversing South India. This traversing consists of navigating through four states- Andhra Pradesh, Karnataka, Kerala and Tamil Nadu as shown in figure 5. Navigation from one state to another is similar to that of the intrastate navigation. The user selects two locations as source and destination; its details along with the latitude and longitude are then displayed.

Multiple paths appear, the user is able to select his desired path and images available on that path are displayed below.

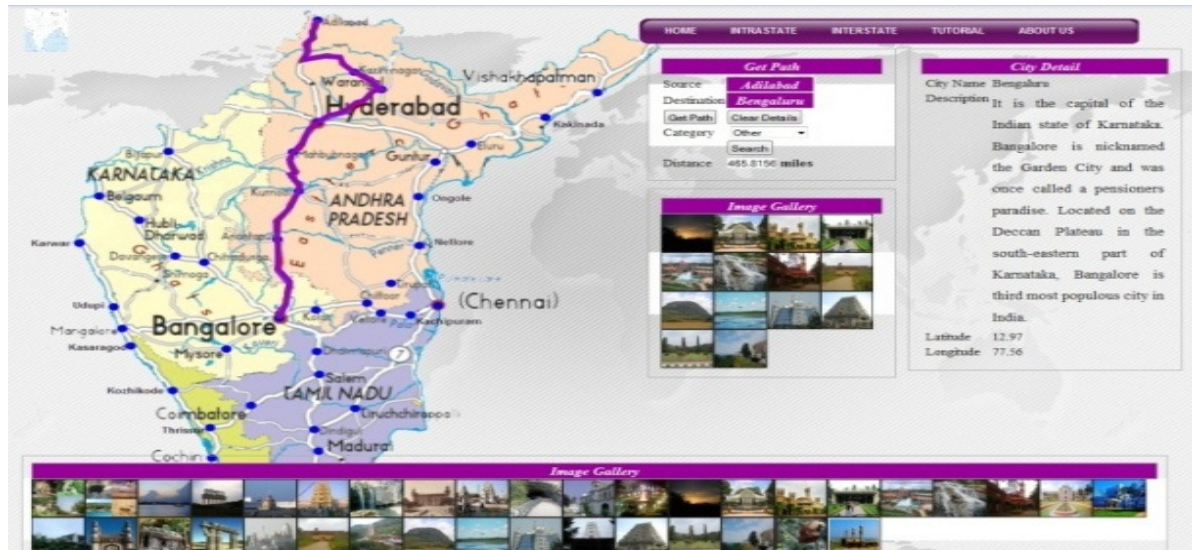


Figure 5: Overview of Interstate

On clicking on a particular image in the image gallery gives an enlarged form of the image. One can then see the enlarged form and the detailed information of that image as shown in figure 6.

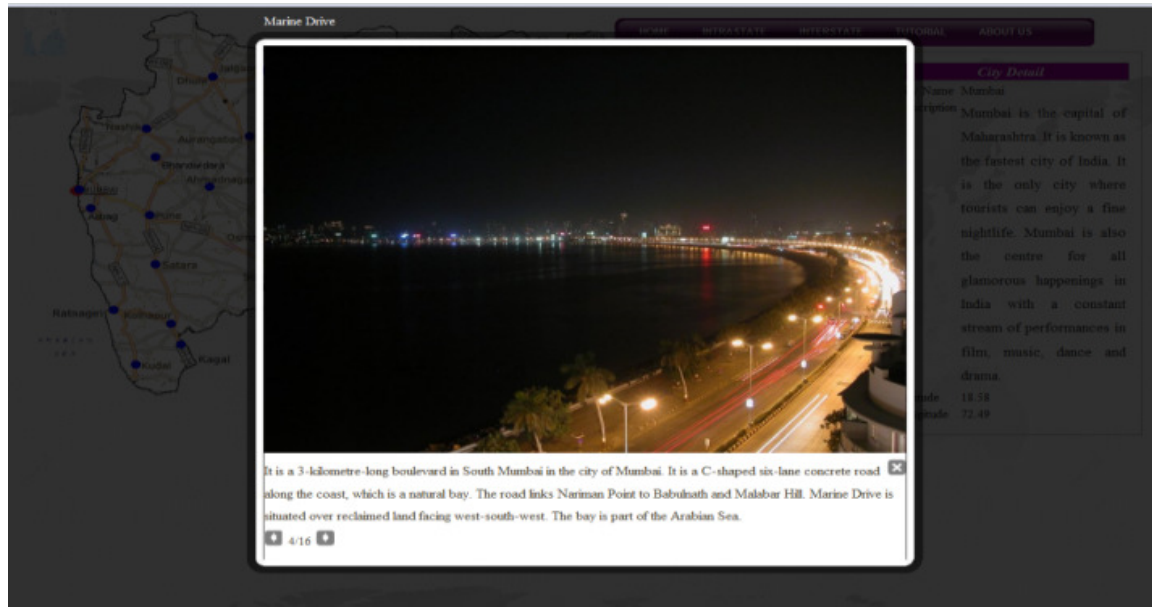


Figure 6: Enlarged Image with details

Figure 7 shows the Login page for Administrator from where he can access all the administrator rights. Here the administrator needs to enter a username and an authenticated password. These administrator rights are the access rights which are given only to the administrator and not to the end user.



Figure 7: Login Page

This is the Administrator Home page from where the administrator can perform the administrator rights. These rights include adding acity, adding images and their description as well as editing and deleting the same as shown in figure 8.

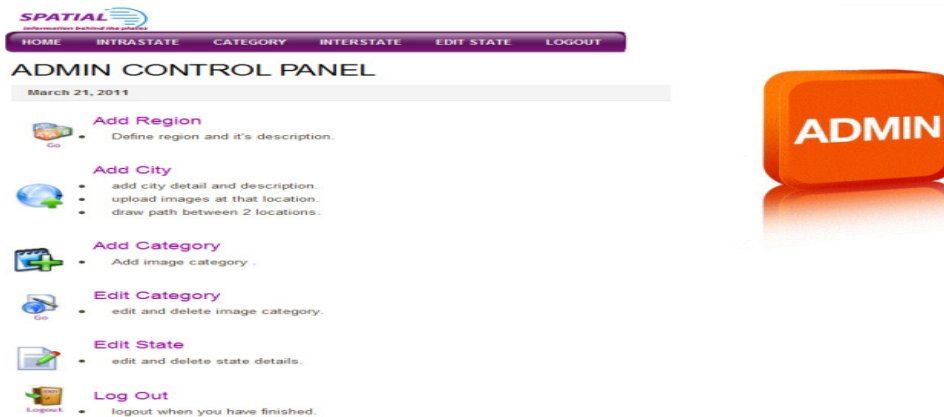


Figure 8: Home Page for Administrator

This is the Administrator Control Panel where the administrator can add a region as shown in figure 9. Adding a region is defining a new state. Adding a new state comprises of defining the state name, state description and other related parameters.



Figure 9: Add State

The Administrator Control Panel also enables the administrator to add a new city, add images and define paths between the cities. Figure 10 shows where and how the administrator can add a city, images as well as their description. He can define multiple paths between two locations. In case of a change or modification, the administrator can also edit and delete the same.

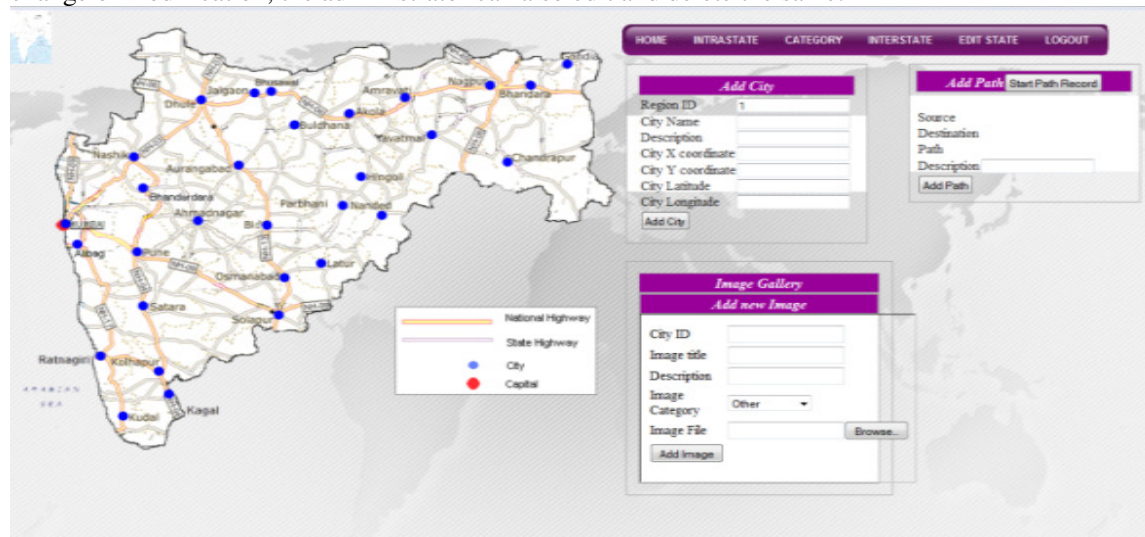


Figure 10: Add Panel

V. CONCLUSION

The system - SPATIAL has been successfully implemented as a photo and topographic information search at a location. Topography means determining the position of any feature or more generally any point in terms of coordinate system such as latitude and longitude. Here, images have also been organized by the specified categories. We have also implemented geotagged images to show the interesting scenes of different places in the world, and help users to find destinations which match their interests best. We can also see the detailed information of the selected place. The system aims on suggesting tourist destinations based on his/her interest. The system also makes image search more efficient, specific, easy and thus more interesting. SPATIAL can be accessed by a number of people especially tourists, thereby making it more popular among them.

REFERENCES

- [1] "Tour-Guide: Providing Location-Based Tourist Information"- a white paper by Xiaoyu Shi, Ting Sun, YanmingShen, Keqiu Li and Wenyu Qu.

- [2]“Geo-location Inference from Image Content and User Tags”-a white paper by Andrew Gallagher, Dhiraj Joshi, Jie Yu and JieboLuo.
- [3] “Determining Photo and Topographic Information at a Location”-published in the proc. of National Conference on ETCSIT-2011 organized by K.K.Wagh Institute of Engineering Education and Research, Nashik.
- [4] “Exploring User Image Tags for Geo-Location Inference” – a white paper by Dhiraj Joshi, Andrew Gallagher, Jie Yu and Jiebo Luo.
- [5] http://en.wikipedia.org/wiki/Scalable_Vector_Graphics
- [6] <http://en.wikipedia.org/wiki/JQuery>
- [7] <http://en.wikipedia.org/wiki/ASP.NET>
- [8] <http://en.wikipedia.org/wiki/JQuery>
- [9] http://en.wikipedia.org/wiki/Microsoft_SQL_Server

Authors biography

Sukhwant Kaur is currently working with Manipal University, Dubai Campus in the Department of Engineering. She has done B.Tech (Computer Science and Engineering) in 1999 from Punjab Technical University. She has completed M.S. (SOFTWARE SYSTEMS) in 2001 from BITS, Pilani . She has worked in Fr. C. Rodrigues Institute of Technology, Vashi, Mumbai as Assistant professor in Computer Department for 10 years. Her Research area is Wireless Communication, Mobile Communication, Image Processing and Software Engineering. She has published 4 papers in International Conferences and 11 papers in National Conference.



Sandhya Pati is currently working as Assistant Professor in Fr. C. Rodrigues Institute of Technology, Vashi, Mumbai in the Department of Computer Engineering. She has done B.Tech(Computer Science and Engineering) in 2002 from Sree Vidyanikethan College of Engineering, Tirupati affiliated to Jawaharlal Nehru Technological University, Anantapur. She has completed M.E from Sathyabama Deemed University in 2006. She has worked in Gokula Krishna College of Engineering, Andhra Pradesh for 4 years. She has published 2 papers in International Conference and 3 papers in National Conference.



Cheryl Rodrigues completed B.E. (Computer Engineering) from Fr. C. Rodrigues Institute of Technology, Vashi, Mumbai. She has published 1 paper in a National Conference.



Jagdish Talekar completed B.E.(Computer Engineering) from Fr. C. Rodrigues Institute of Technology, Vashi, Mumbai. He has published 1 paper in a National Conference.



Abhijeet Dhere completed B.E. (Computer Engineering) from Fr. C. Rodrigues Institute of Technology, Vashi, Mumbai. He has published 1 paper in a National Conference.

