



UNIVERSITY GRANTS COMMISSION
Minor Research Project (MRP) 2015
APPLICATION FORM

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Subject Applied

MRP ID : **ROMRP-SERO-INFO-2015-16-76038**
 Regional Office : Southern Eastern Regional Office (SERO)
 Research Project : Minor
 Broad Subject : Information Technology
 Areas of Specialization : Recommendation System
 Duration : 2 Year, [View Declaration Certificate](#)

Principal Investigator

Name : Dr.D.Prabha, Female
 Date of Birth : 14/03/1981
 Category : GENERAL
 Educational Qualification : B.E.,M.E.,Ph.D.,
 Designation : Associate Professor/Reader
 Department of CSE, Sri Krishna College
 Correspondence Address : of Engineering and Technology,
 Coimbatore-641008
 Email : prabha@skcet.ac.in

Whether Principal Investigator is appointed on regular basis? : Yes

Contact No. : 7373350567

Is Principal Investigator superannuated? : No



Experience Detail

Teaching Experience : UG Level :2 PG Level :8
 Research Experience : 7
 Ph.D. Status : Awarded
 Year of Award of Doctoral degree : 2014
 Title of Thesis of Doctoral degree : Clustering and rule induction for customer behavior analysis using rough sets

Publication Details with impact Factor(only for Science Subjects):

Papers Published : Accepted :13 Communicated :0
 Books Published : Accepted :0 Communicated :0

1. Research Papers/Review Articles/Conference Proceedings (during last 5 years/Best 05

Paper) :

Title with page nos	Publication Type	Journal ISSN/ISBN No.	Refereed or Not	Sole/Co-Author
Rough set approach for characterizing customer behavior, pp. 4565-4576	International Journal - Springer	1319-8025	Refereed	Dr.Ilango Krishnamurthi
Rough set approach for customer segmentation, pp. 1-11	International Journal - SNIP & SJR	1683-1470	Refereed	Dr.Ilango Krishnamurthi
Enhanced rule induction algorithm for Customer Relationship Management, pp. 1471-1478	International Journal - SCI Impact factor	1935-0090	Refereed	Dr.Ilango Krishnamurthi
Customer behavior analysis using rough set approach, pp. 21-33	International Journal - SNIP & SJR	0718-1876	Refereed	Dr.Ilango Krishnamurthi
Clinical data analysis in big data using hadoop, pp. 24-27	International Journal	2229-5518	Refereed	G.Kavitha

[View List of Paper\[s\]](#)

Project Applied

Name of the Institute : SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY

Sri Krishna College of Engineering and Technology, S
Institute Address : ugunapuram, Kuniamuthur (PO), Coimbatore-641008 Tamil Nadu

Department : COMPUTER SCIENCE AND ENGINEERING

University/College : College

Name of the College : Sri Krishna College of Engineering and Technology

Name of the University : Anna University

Whether the college is located in rural/backward area : Yes

Whether the University/College/Institution is approved under section 2 (f) and 12 (B) of the UGC Act ? : Yes, [View 2\(f\)& 12 B recognition letter issued by UGC](#)

Proposed Research work

Project Title : RANKING BASED LOCATION AWARE BUSINESS RECOMMENDER SYSTEM

Introduction : (Including Origin of the research problem..) :

Origin of the research problem:

The most widely used search engine Google's products such as Google Earth and Google

Maps, as well as other geographic applications, returns locations as objects as a search result. They return such results by querying the spatial databases. Thus spatial queries had become predominant in recent years.

Many queries exist and some of them include pure spatial queries such as range queries, mck queries, RTknn queries, nearest neighbor queries, range queries and spatial joins. Queries on spatial objects associated with textual data are represented by set of keywords and get more interest from the spatial database research community and the industry.

Spatial databases return a set of results for a search query. When we give the keyword for searching, the engine takes the keyword and it in turn produces three sets of data and locates them on Google map by pinpointing as a search result. The set of data it produces are,

- a) Name of the object
- b) Review of the object
- c) Address of the object

So, it produces the search result objects as marking for all the resultant set objects. With this information, we get plenty of choices among which we have to select what we require. Since they were not listed in order, it gives a clumsy picture of non linear type. With this kind of search results, when we try to use them for obtaining some information through searching, it provides a wide set of results. It takes more time to select what we require from them. It may even misguide the user to select a wrong option. Thus, it acts as the base problem that is to be treated.

Introduction:

Technology's rapid development shares business based and location based data about a person. Grouping of both the data's will yield a new data called economy-spatial data. This data can be used in disaster rescue, activity planning, geo-crowd sourcing, spatial task outsourcing, business plans recommendation and travel package recommendation.

Though there were many areas in which economy-spatial data has its roots, business plans recommendation is an area which not only benefits an individual but also the society. The Economy-spatial data can be used for improving business in a location. This in turn, increases the social development.

Business is a competitive market where each follows some strategy to improve their income. All companies have their own department for not only improving their business, but also to analyze their business growth. But, for an individual either by own, thinks about an idea for business and starts collecting information from various resources or gets idea from family, neighbors, well wishers and starts collecting the information. After collecting the required information, analyzes the feasibility. If it is feasible to carry out, starts planning and works out to make that idea into a realistic

one.

Review of Research and Development in the Subject:

1. International Status

GoogleMaps is a product of Google which is used worldwide. Around 1000000000 worldwide use GoogleMaps daily. There are roughly 55 Million unique visitors each month in the US. Google Earth has been downloaded over 500000000 times as on July, 2015. But no system provides ranking on objects and recommendation based on it.

2. National Status

In India, no product is specifically used for business recommendation in location basis. Google Maps, a product of Google which is used worldwide is used here as a way for finding locations. But it does not provide ranking on objects and recommendation based on it. So, the system what we develop will be the first system for location aware business recommendation.

3. Significance of the study

Irrespective of whether the business idea is own or from social circle, the individual has to do some case study in the idea what they have. Then they have to analyze the constraints, possibilities, permissions to obtain from government, competitors, success of business in the location where they wish to start and this to be factors increases largely by depending on an individual's thinking.

To collect resources and to start analyzing feasibility, it consumes more time. There are lot of factors which are to be considered before making a decision to start a business in a particular area.

The system that we propose is to solve this issue. It is to decrease the time consumption for feasibility analysis and to provide required guidelines to obtain necessary information for starting the business.

4. Its potential contribution to knowledge in the field of social relevance or national importance.)

Business: This project will give business idea recommendation based on the location for the people who wish to start a new business and this project also gives competitors information in that location to improve their existing business.

Travel package recommendation: economy-spatial data can be used to recommend travel packages based on the user needs.

Objectives :

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The proposed system is based on the following objectives,

- ❖ Business idea recommendation based on area where they wish to start.
- ❖ Competitors information in the particular area where they wish to start.
- ❖ Guidelines to be followed for obtaining permission to start a business.

Methodology :

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The method that will be used for the proposed system was as below,

- ❖ Each location will be having a unique value based on latitude and longitude. They are called as spatial data.
- ❖ Each location will be having some popular land marks nearby. They are called as landmarks.
- ❖ Each place may or may not have the basic facilities like hospital, school, banks and etc...
- ❖ Each place may or may not have a particular business to be held there.

We use the spatial data, basic facilities and landmarks to suggest a suitable business idea in the preferred location. In addition, we provide the competitor's information based on Inverted index tree. It considers all the factors that were most basic and provides the suggestion. The data what they provide will be an updated one. Thus eliminates the time consumed for an individual to carry out the case study in the particular area.

Let P be a set of multidimensional points. As we combine keyword search with location and textual information on facilities such as restaurants, hotels, etc., Here, we mainly focus on dimensionality 2 by considering the points in P with integer coordinates $[0, t]$, where t is a large integer. The valued coordinates represented in 2D is still finite and enumerable. So with proper scaling we proceed with such consideration.

Each character represented in the graph is an object in P with its textual data as a document is represented by W_p . For example, if alphabet stands for restaurant, W_p can be its menu. In addition, it may also have different useful information.

A Nearest Neighbor (NN query) gives a point q and a set W_q of keywords (W_q as the document of the query). It returns the point in P_q that is the nearest to q , where P_q is defined as,

$$P_q = \{ \text{character belong to } P \mid W_q \text{ is a subset of } W_p \}$$

In simple, P_q is the set of objects in P whose documents contain all the keywords in W_q . If the P_q return is empty, the query returns nothing. This problem as an overall can be considered as k nearest neighbor (k NN) search, which finds the k points, the entire P_q should be returned.

For example, assume that P consists of 6 points whose locations and a query point q are given as black dots and white dots. Fig.1 (a) describes the associated text for Characters as below.

P	W_p
A	{a,b}
B	{c}
C	{d,e}
D	{f,g,h}
E	{a,f,g}
F	{c,g,h}

Fig.1(a).Associated text for Characters.

Consider the query point q at the white dot with the set of keywords $W_q = \{f,g\}$. Nearest neighbor finds D as the nearest neighbor as F misses {f} in it. If $k=2$, In addition, E is also returned. So the result set contains two character points namely {D, E}. The result set remains unchanged for $k=3$ or higher values as they were the only two objects that have both the keywords {f, g}.

Inverted Indexes (I-index) have proved to be an effective access method for keyword-based document retrieval. Consider the figure 1(b) below,

Word	Inverted list
a	A,E
b	A
c	B,F
d	C
e	C
f	D,E
g	E,F
h	D,F

Fig.1(b) Example of an inverted index(I-Tree)

It contains the index for the data set of sample points. Each word in the vocabulary has an inverted list by pinpointing the ids of the points that have the word in their documents. The list of each word maintains a sorted order of point ids. Thus it provides considerable convenience in query

processing by allowing a merge step.

Given a nearest neighbor query q with the keyword set W_q , the query algorithm of I-Index first retrieves the set P_q of the points that have all the keywords of W_q . Then it ranks them based on the distance from the center point. Then, our system analyses the menu items which were unique with the menu items of the resultant restaurant's list. Then it considers as how many menu items were repeated and recommends the items that are to be added for our business.

In case, if no restaurant is available with such queried menu items, then it recommends the new such menu item if we opt to start restaurant. Thus, it eliminates the time consumed for gathering information about how to develop business. Thus, the proposed system helps the individual as well as society's development by reducing time and saving cost.

References:

1. Li, Yafei, et al. "Geo-Social K-Cover Group Queries for Collaborative Spatial Computing.", IEEE Transactions on Knowledge and Data Engineering, 2015.
2. Tao, Yufei, and Cheng Sheng. "Fast Nearest Neighbor Search with Keywords." *Knowledge and Data Engineering, IEEE Transactions on* 26.4 (2014): 878-888.
3. Zheng, Yu, et al. "Inspire: A framework for incremental spatial prefix query relaxation.", IEEE Transactions on Knowledge and Data Engineering, 2015.

[View Year wise plan of work](#)

Details of Collaboration, if needed :

-

Assesment Certificate: [View Assesment Certificate](#)

Financial Assistance

Hiring Services : 100000

Field Work and Travel : 50000

Chemicals and Glassware : 0

Contingency (including special needs) : 25000

Books and Journals : 25000

Amount of Equipment : 0

Total : 200000

Whether the teacher has received support for the
research project from the UGC from any other No
agency? :

Details of the Project/scheme completed or ongoing with the P.I :

-

Institutional and Departmental facilities available for the proposed work :

Computers, Laptops, servers

Other Infrastructural facilities :

Open source software, Computer Lab, InternetFacility, Wi-Fi, Library, e-journals, smartbook

Any other information which the investigator may like to give in support of this proposal which may be helpful in evaluating :

-

Recommendation/ Forwarding letter from the
Principal: [View Principal Letter](#)

DECLARATION

I hereby declare that I have read the guidelines of Major Research Project Scheme of the University Grants Commission. In the event of a project being awarded, I undertake to engage myself for research work on the subject. I further declare that to the best of my knowledge and belief, the particulars given in the form are correct.

Date :15/08/2015 21:52:00

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