Implementation of Web-based Job Agency System By Using Proximity Search

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Abstract

Proximity Search is successfully used in Information Retrieval (IR) System to query the keywords that occurring near each other. This system implemented the web based on approximate search and proposed on the client server web based system. Web browsers and servers need a way to communicate with one another. This system calculated the similarity value for exact match and approximate match that allows for user to quickly find the relevant information. This system designed to support the internet users who are interested searching for the job from online processing. The system is implemented by Java Server Pages (JSP) and utilizes Web-based development tools which are the most recent Web server application development technology such as Hypertext Markup Language, Java Server Pages and SQL server 2000 database.

Keywords: JSP (Java Server Pages), Proximity search

1. Introduction

Client Server Environment has two principle components. The application, referred to as the client (or) 'the front end'. The database server referred to as the 'server' or the 'back end'.[11] Proximity Searching methods are used for information retrieval system implemented by the on line job search agency system. In this system our searching methods is produced the exact match or approximate match information to the user. When user requests the system, proximity methods calculated according to the user query and reply to the information by sorting the weight of each tuple.[9]The basic web architecture is based on a client/server model. A client is software application that runs on the end user's computer. Netscape Navigator, Internet Explorer are example of web browsers, which can be used on the client machine to browse the information provided by the server.[2] A server is a software application that runs on the information provider's computer. Client and server on the web communicate using Hypertext Transport Protocol (HTTP).[7]Web browsers are the client software required by the user for accessing the web server. Its function is to send the user request for the particular file to web server and then display the result to the user. Web server, browser uses HTTP protocol for communication with each other popular web browsers are Netscape, Internet Explorer. [5] Web server is responsible for processing the request of the given web page. Pages are stored as JSP files.[3] When the client requests, the particular page, it's the responsibility of web server to process that request. Server may have to execute Java Server Pages (JSP) that is server side scripts or interact with databases for processing the request. [3]Database is a collection of information in an organized manner.[10] Most of the websites need to put up relevant data on the web pages so that the clients can access that information. It not only serves time from re-entering all the information when the user are creating HTML pages, [5] but also allows web sites to have dynamic pages which can be changes regularly without the developer bothering to change the HTML code of those pages.

In information retrieval system, proximity search is used for data retrieval. [9] These searching methods calculate the weight of each record according to the find and near query. The results are may be exact match or approximate match.

2. Proposed System

2.1 Proposed System Overview

In this system, employee sends a request to the system about their desire job information. The system processes the request of information and reply the desire job information to the employee using proximity engine. The company (employer) can request employee information to the system who

applies to that company. The system process the request of employee information using proximity engine and reply to the company The company can check the application form and choose the qualified application form, reply the interview list to the system. The system can reply to the employee who was chosen by company in Interview list.

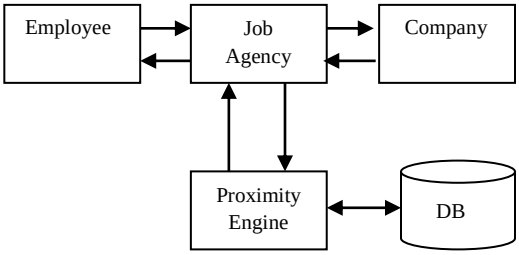


Figure 1: Proposed System Overview

2.2 Algorithm for Employer Site

```
Begin
    If (Employer is not a member)
      Begin
        Sign up for member.
      End
    Else
      Begin
        Start log in process.
          If (success)
              Begin
                  Receive request (REIFO
              /AEIFO  /UCIFO)
                    If (requests == REIFO)
                      Begin
                          Permit retrieves
                          information.
                      End
                    Else if (request==
                          UCIFO)
    Begin
        Permit the desire process
        (delete/update)
    End
    Else
        Begin
        Adding the new job process
    End
End If
End
```

2.3 Algorithm for Employee Site

```
Begin
  If (not a member)
    Sign up
  Else
    Start log in process
      If (success)
        Begin
            Permit the user query and
            reply information.
            Receive the user application
            form
        End
      End If
  End If
End
```

2.4 Types of System User

This system have two types of client (user).One of the client is the employee (jobseeker), who wants to find job. The employee information includes the employee name, NRC, Email, Address, Qualification, etc. The employee can apply the job using this system. Another is the employer (company), who wants to get employee for their job. The employer has their job information includes company name, job name, address etc.

2.5 Job Search Agency System

The system chooses the user type (employee or employer) before checking new or old user. This process shows in the following figure.

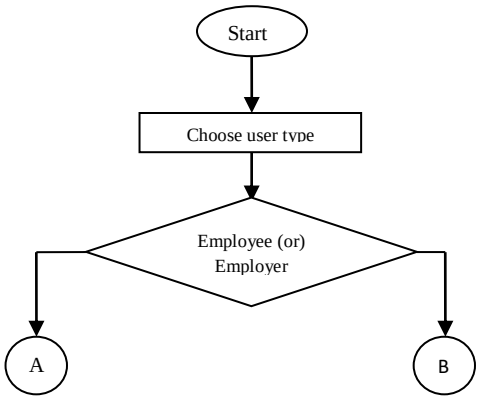


Figure 2: Choose User Type Diagram

In the employee log in process, system checks the old user and new user. If the user is new user, user can make sign up process. If the existing, user can enquiry the job information and can apply the desire job and query the interview result. The employee processes are displayed in the following figure.

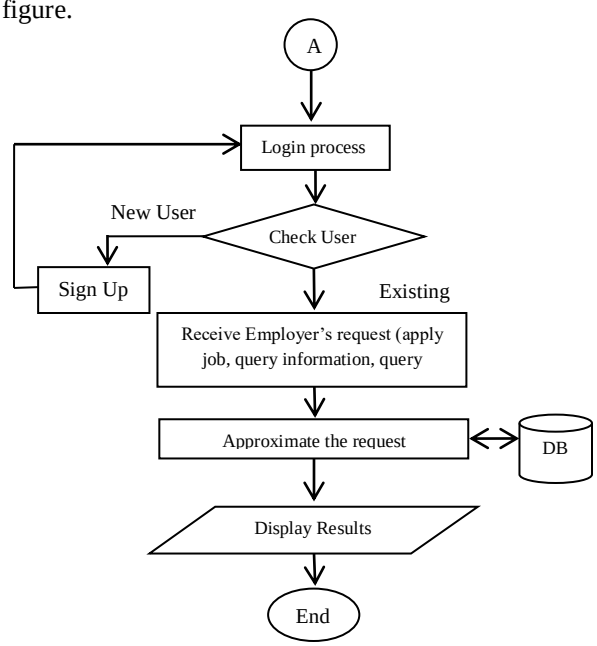
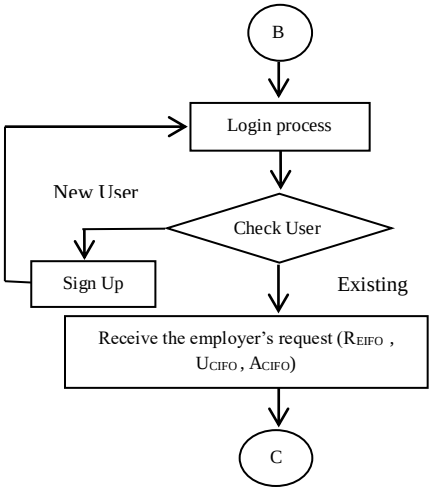


Figure 3: Job Seeker's Process Diagram

In the employer log in process, system checks the old user and new user. If the user is new user, user can make sign up process. If the existing, user can view the employee application form, adding the new job information and update the job information. The employer's process flow diagram is as shown in the following figure.



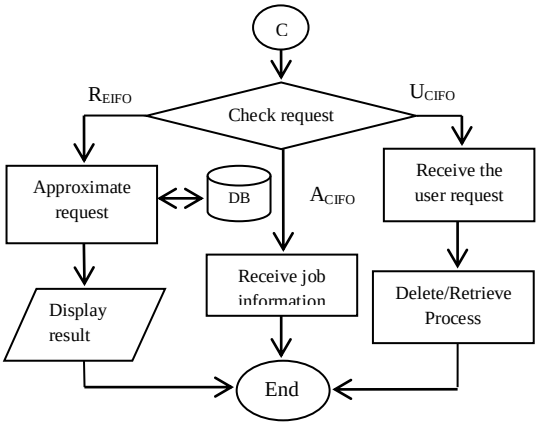


Figure 4: Employer's process diagram

This system accept find and near query from the user. The system calculates the similarity of find query and near query. The weight of each tuple is calculated from adding value of similarity of find and near query. Finally the system sorts the results according to the weight of each record and then displays the user.

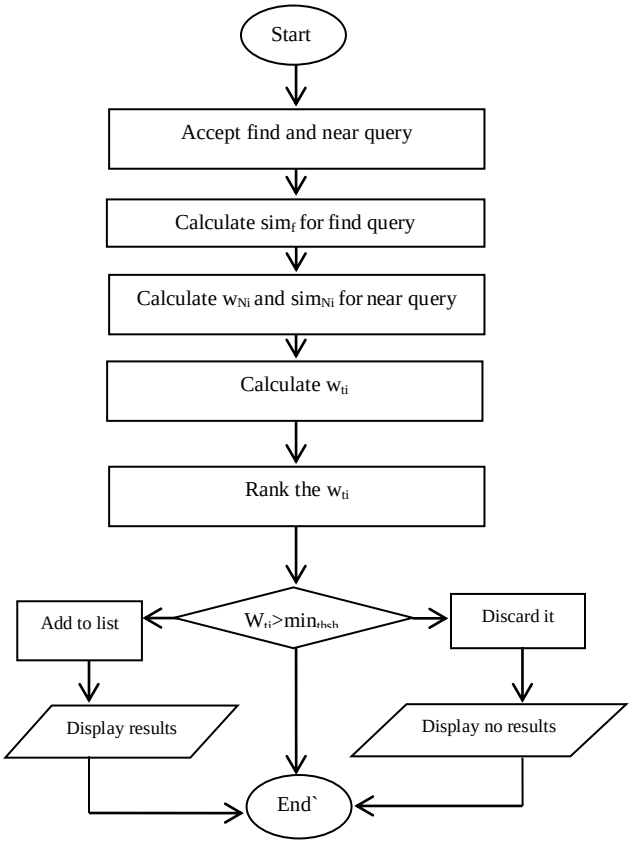


Figure 5: System Flow Diagram of Proximity Search Process

2.6 Proximity Search Function

A find query specifies a Find set of data that are potentially interest. A near query specifies a near set. The objective is to rank data in the Find set according to the Near data. [9] The system will define the similarity of find and near search in database. The similarity will be produced 0 when no exact match and sim_{Nmax} +1 when exact match. The system will be calculated weight of each tuples.

Proximity search functions are as follows:

$$w_{ti} = sim_f + \sum_{i=1}^{n} (w_{Ni} * sim_{Ni}) \quad (1)$$

where, $sim_f = sim_{Nmax} + 1$, if input=retrieve
$= 0$, otherwise
$sim_{Nmax} = 3p$
W_{ti} = weight of each tuple
Sim_f = similarity of find query
W_{Ni} = weight of near query i
Sim_{Ni} = similarity of near query.
P = no of preferences.
$Min_{thshol} = 3$

2.6.1 Example of company results for employee using Proximity Search

In this example, user request is programmer (Find) and Near queries are B.C.Sc degree and expected salary is 50000.Proximity function are calculated the user query as below.

sim_f = sim_f(input,retrieve)
= sim_f (programmer, programmer)
=3p+1=7

w_{N1} =3
sim_{N1}=sim(B.C.Sc, B.C.Sc)
=1
w_{N2} =2

sim_{N2}=sim(50000,50000)
=1
w_{t1} =7+ (3*1) + (2*1) = 12

sim_f = sim_f(input,retrieve)
=sim_f(programmer, web designer)
=0
w_{N1} =3
sim_{N1}=sim(B.C.Sc, B.C.Sc)
=1

w_{N2} =2
sim_{N2}=sim(50000,50000))
=1

w_{t2} =0+ (3*1) + (2*1) =5

Finally the system display the result to the user (jobseeker) using this proximity function.

2.6.2 Example of applicant results for employee using Proximity Search

In this example, user request is "Web Designer" (Find) and Near queries are B.C.Sc degree and age may be between 18 to 25 and gender is Female and working experience is at least 1 year .Proximity function is calculated user query and display the final results to the user (company).

sim_f = sim_f (input, retrieve)
= sim_f (Web Designer, Web Designer)
=3p+1=13
w_{N1} = 3
sim_{N1} = sim (input,retrieve)
=sim(B.C.Sc, B.C.Sc)
=1
w_{N2} = 2
sim_{N2} = sim (input,retrieve)
=sim(18-25, 20)
=1
w_{N3} = 3
sim_{N1} = sim (input,retrieve)
=sim(Female, Female)
=1
w_{N4} = 3
sim_{N4} = sim (input,retrieve)
=sim(at least 1 year, 1)
=1
w_{t1} = 13+ (3*1) + (2*1) + (3*1) + (2*1) = 23

sim_f = sim_f (input, retrieve)
= sim_f (Web Designer, Programmer)
=0
w_{N1} = 3
sim_{N1} = sim (input,retrieve)
=sim(B.C.Sc, B.C.Sc)
=1
w_{N2} = 2

sim_{N2} = sim (input, retrieve)
=sim (18-25, 23)
=1
w_{N3} = 3
sim_{N1} = sim (input,retrieve)
=sim(Female, Male)
=0
w_{N4} = 3
sim_{N4} = sim (input,retrieve)
=sim(at least 1 year, 1)
=1
w_{t1} = 0+ (3*1) + (2*1) + (3*0) + (2*1) = 10

3. System Implementation

This system has two types of users and two databases for these users, one database for the company and one for the employee. In the company database, company name, address, phone no, job name are required. In the employee database, attributes are name, age, degree, gender, working experience, other qualification, and email address. The attributes of the company and employee are as in the following figures.

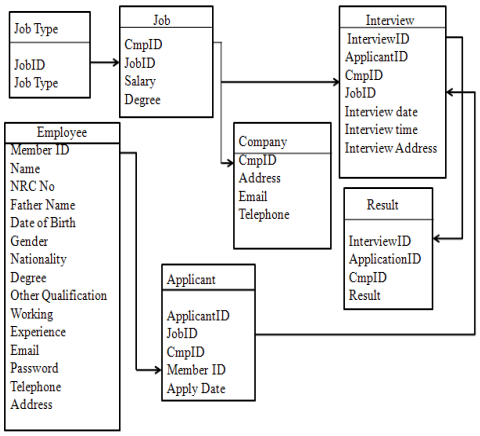


Figure 6: Database design for Job search agency system

In this system, when the clients (employee) request the query according to the find query (job) which are related to the near query. In the employee's job searching method, near query may be degree, salary. The system displays the job result according to the weight of each record. The system produce the exact match or approximate match result to the user.

When the user request the job that position is Programmer (find), according to the B.C.Sc degree (Near) and expected salary with 50000 (Near).Then the system calculated the possible exact match and approximate match result tuple to the user. After displaying the result to the user, the employee can apply their interested job in the short time. The results are shown in the following figures.

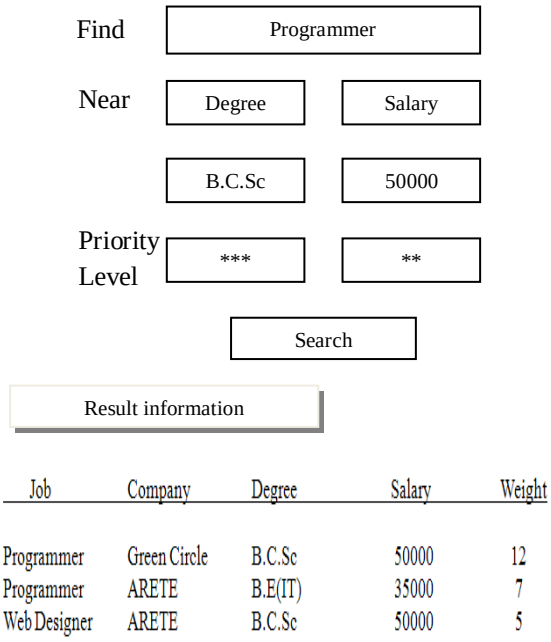
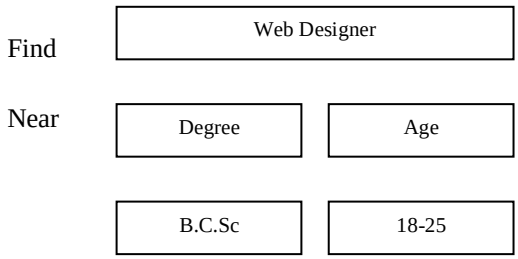
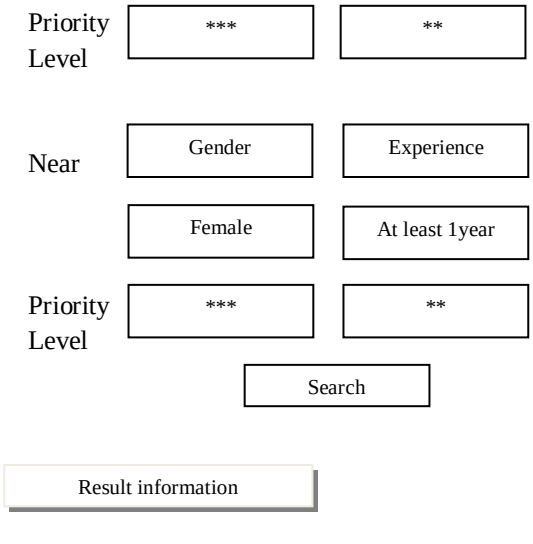


Figure 7: Result of using proximity search function for employee

When the clients (company) request the employee query with job "Web Designer" position according to the "B.C.Sc" degree with gender is "female" and she has "at least 1year" in job experience and she may be between 18-25 years old. The system calculated using proximity search and response to the user exact match or approximate result .According to the system results; user can choose the application form in the short time. The results are shown in the following figures.





Job	Name	Degree	Age	Gender	Experience	Weight
Web Designer	Pearl	B.C.Sc	20	Female	1	23
Web Designer	Ei Ei	B.Com	22	Female	0	18
Programmer	Zin Zin	B.C.Sc	20	Female	1	10

Figure 8: Result of using proximity search function for employer

4. Conclusion

Anyone with an access to internet connection can take advantages of an online job search services. The system can calculate the results by using the proximity searching methods. So the user can get job information according to the system searching methods in a short time. By using this system, the Internet users (jobseeker or company) can easily get the job information. In addition, it is less stressful than traditional job searching because online job searching involves electronic rather than personal interchange. For employers, they can get the suitable workers without time consuming. Employers and jobseekers appreciate the benefits of online recruiting. This system aims to provide the exact match and approximate match job information to the user using the proximity search.

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