Location based Intelligent Job Search and Real Time Notification System

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Abstract

The Interview process in these days can be a hectic task for employees as well as employers no matter prior planning. A detailed search of newspapers, job websites, human agents, are needed to identify an employment opportunity that is compatible to the abilities, anticipated remuneration and social needs. Many Job Search sites such as Monster.com, Naukri.com, and Times Job.com etc allow the job seekers to register online and search and apply for employment. However most of the job search sites focus more on registration and changes regarding location has to be updated on a regular basis. Also no attempt is taken to track the current location of the employee and no notification is sent to the employee regarding the nearby recruitment process. All of the above facts are taken into consideration and a system for job search and advanced recruitment facilities are made available. The proposed solution would involve the creation of an applicant, job search and employer in getting a list of jobs based on the job seekers preference. All of the current available recruitments are sent as a notification to the job seeker based on the current Location. As a result, recruitment process can be conducted easily by the employers and prospective employees can make use of the updated information without the need of any detailed search.

Keywords: M-commerce, Agents, Android 2.2, Expected Utility, Location Tracking, Notification

I. INTRODUCTION

A lot of challenge is associated in the present scenario for finding the right people for the job and the right organization to be employed. Unemployment still continues to be a curse mainly because of the lack of updated information and necessary resources. A job search would involve the detailed search of a newspaper, radio and television broadcasts, social media updates, local advertisements, registration in job search sites such as monster.com, naukri.com. Most of the employers do not register their company details on such sites instead post it on their official website only. Therefore, most of the job vacancies goes unnoticed and the right people do not get selected for their respective job positions. Also a great deal of information regarding the company is not obtained for the job seeker. Taking all these into consideration we propose to develop an intelligent system which is capable of recording the details of both an applicant as well as a job seeker. The respective preferences are also recorded and based on them the job offers and recruitment details are sent as notification by taking the current location as an important parameter. The proposed system would be based on the ANDROID technology to provide mobile based accessibility.

The paper is organized in sections as follows. Section 2 provides details on Location Based Systems, Section 3 provides details on intelligent job search system, Section 4 depicts the implementation details involving Android 2.2 with Google Maps API. Section 5 is conclusion and future work.

II. LOCATION BASED JOB SEARCH AND NOTIFICATION SYSTEM

Taking into consideration the existence of many job search and registration sites we propose an entirely new system which is capable of tracking the location and provide the job seeker information of upcoming recruitment details and their details regarding venue and time. All of the job search sites require manual updation of the location and most of all it occurs that most of the organizations fail to reach the information to the right people. This system is proposed to be a solution to the above mentioned problem. Moreover, it acts as common platform where both the employees as well as the job seeker meet. A lot of valuable

information is passed on without much human interference. When the preference set by the employer and area of interest of the job seeker matches the notification is automatically sent on the registered device such as mobile phone, tablet etc.

A. Proposed Model

The system mainly comprises of two modules, The module for a job seeker and the module for the employer. Both of them are made to register by providing valid information both on the part of the individual who is seeking a job and the employer who is capable of issuing a job offer. Once they are authenticated they can fill in the further details and set preferences based on qualification or any other area of interest. The facility of Google Maps is made use of to set the venue of the recruitment. A date and time is also required for further information. The applicants with similar preferences and who are in a radius of 5km distance are notified about the current updation of a company's profile. Moreover, the job search can also be made use of to know if a particular location has any sort of recruitment process going on.

B. Job Search Theory

In a dynamic labour market, the process by which people find new jobs is important not only to the individuals themselves but also to policymakers and scholars. Job-search models offer some solutions by considering factors that determine individuals' demands and their prospect for finding an acceptable job offer. It attempts to describe the problems faced by individuals and propose strategies for making optimal decisions. This research focuses on Location based Job Search. In Location Based Job search, the individual is interested in choosing a location and finding out the nearby recruitment offers. The eventuality of the job-offer is referred to as the outcome and is dependent on preferences of the searcher. There are several web based applications like Seek, Academic keys.com, careerbuilder.com etc. and mobile based job search applications that exist for Android such as Linkup, Hire Droid, etc. But they do not support any location based architecture and do not provide job search with dynamic changes in location and very much needed for selecting a particular employer for job. Also Job Search results been retrieved been ordered by preferences and location.

III. INTELLIGENT JOB SEARCH SYSTEM

Our Intelligent Agent Job Search system would dynamically facilitate the requirements above. Databases were developed and tuned to provide robust support for the search engines. The system architecture is presented in Fig 1. Three agents were used in the system, the Employer, Job Search and Applicant Agents and their details are discussed below:

A. Applicant Agent

The primary responsibilities of the applicant agent is to submit search request based on dynamic preferences, configurable job search preference importance matrix, employer rating, configurable salary mark-up and markdown thresholds.

B. Employer Agent

This agent is responsible for job posting, configurable job criteria importance weightings, interacting and to ensure only valid jobs appear in listings and formal housekeeping for all closed and expired jobs in the form of automatic archiving.

C. Job Search Agent

This agent is the workhorse of the system. Its responsibilities include dynamically and intelligently adjusting search criteria based upon Location and preference ie based on qualification and work interests.

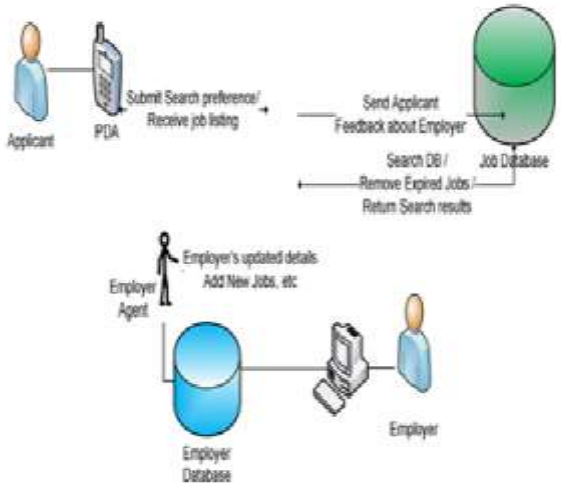

Fig. 1: Job Search Flow

The following are possible variables that were be used as the basis of measuring the expected utility of a specific job presented to the applicant.

– Industry
– Occupation
– Education
– Job type (Full time, part-time, contract, etc)
– Career Level (amount of experienced obtained versus what is required for the job)
– The Job search agent builds dynamic queries from constraints and settings and execute on the database with preference rules as below:

- If job is available for the location matching with the venue of the recruitment
- If job is available for the matching area of interest of the employee

IV. IMPLEMENTATION USING ANDROID

The Intelligent Job Search System was implemented using MySQL database, and Android 2.2 with Google API for the user interface including Google map plug-in for location lookup. The Agents used a user defined job search ontology to facilitate a fully object oriented agent communication architecture.

There are several scenarios that are possible from the discussion above, however the following three scenarios will be considered with results presented:

1) Exact match in another location along with salary markup
2) Approximate match in same location with best matched allowances and benefits
3) Approximate match in same location along with salary markup and markdown

Fig. 2: Configure Search Preference Screen.

Fig. 3: Google Maps- Location Selection

The applicant agent now enters the search criteria which includes the Country and city from Google Map. Also the other criteria like area of interest Career level etc. Now the search criteria are being submitted, Job search agent is started from the Android handset that queries the database to match the user criteria to retrieve the jobs and list to the user's handset based on search preference system set. In here the search agent finds there exists no job that matches the criteria in India, Kerala and possess the intelligence to match in another location. The agent now finds one job that matches his criteria and produces the result with interview venue and date.

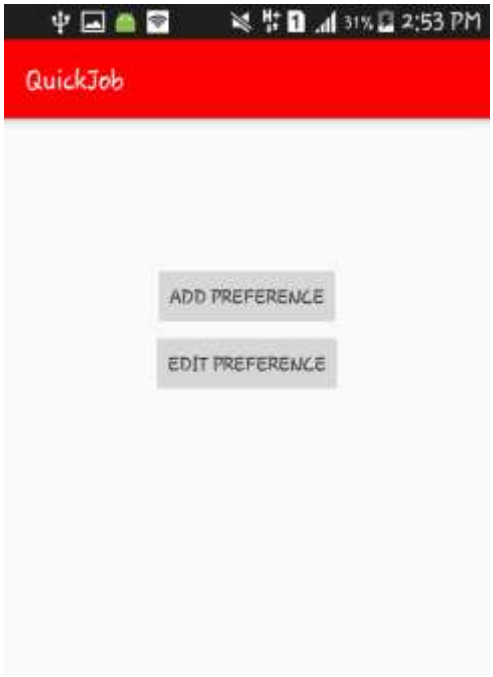

Fig. 4: Job Search Agent Results

Finally, the notification appears on the job seekers device when the location matches. Figure 5 represents the notification obtained.

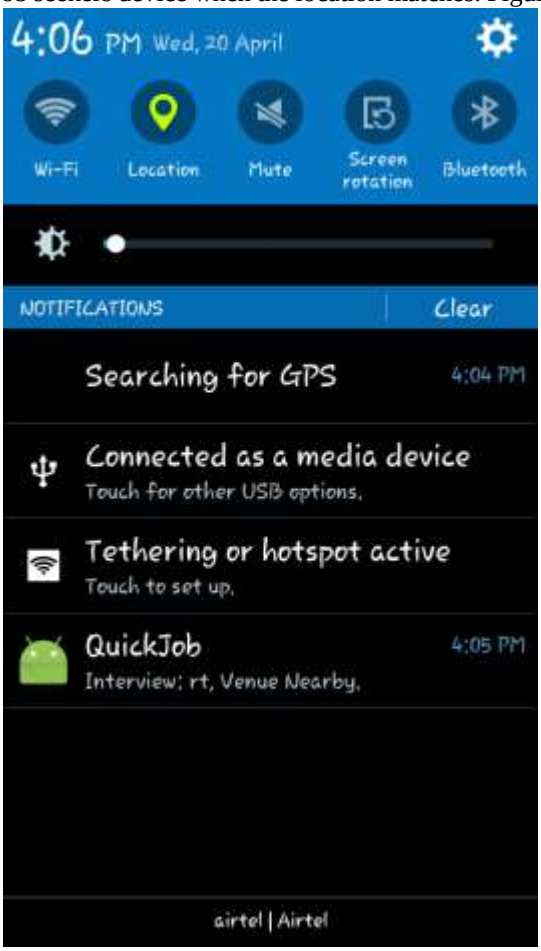

Fig. 5: Notification based on Location

V. CONCLUSION & FUTURE WORK

Job Search is a very involved process that could require hours of interaction with different search sites, applications, human agents, etc. The developed system intelligently anticipates the needs of the user and makes intelligent decisions based on preference rules and dynamically make location, salary markup and markdown, and allowances choices that are perceived beneficial to the user. This is evident in the results presented in the form of scenarios and supporting screenshots. The system could be extended to include a secure application process where the applicant's experience and education is verified possibly by including biometric data along with the job application details. In addition, the job search process could enhance the calculation of utility by including risk factors of success in choosing one job over another. This could enhance the probability of applying for the job that would be most suitable for an applicant on many levels.

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