IT Job Portal in Android

Radhika K. Rathi	Neha V. Londase	Rhucha D. Gangamwar
Dept. Computer Science & Engineering.	Dept. Computer Science & Engineering.	Dept. Computer Science & Engineering.
S.G.B.A.U,Amravati University	S.G.B.A.U,Amravati University	S.G.B.A.U,Amravati University
J.D.I.E.T,Yavatmal	J.D.I.E.T,Yavatmal	J.D.I.E.T,Yavatmal

ABSTRACT

The Job selection process in today's global economy can be a daunting task for prospective employees no matter their experience level. It involves a detailed search of newspapers, job websites, human agents, etc, to identify an employment opportunity that is perceived compatible to abilities, anticipated remuneration and social needs. Search sites such as Seek, Academickeys.com, Careerbuilder.com, Job-hunt.org, Monster.com, etc allow prospective employees to register online and search and apply for employment. However most do very little to profile employers against employees or even attempt to confirm the validity of the data submitted by prospective employees. Also no information exists on feedback of the employer too on various criteria submitted by employees. Taking all these into consideration we here have proposed an intelligent agent (instead of the human agent) to perform the same search operations by interacting with the employer and job search coordinator agents.

Keywords

Android, Administrator, Jobseeker, Employer, Job Search.

1. INTRODUCTION

In today's global economy, the challenges associated with finding a suitable job is amplified by the techsnicalities associated with the Job search process which is seen by experience. Normally when we want to apply for a job, we search the newspapers; listen to radio and television broadcasts that may advertise vacancies and also job seekers register themselves with job site portals such as Academickeys.com, Monster.com, and Careerbuilder.com and so on.

IT Job Portal is a web-based mobile application that provides a platform for candidates seeking job and the employers in IT Sector to share their needs.

The candidates seeking job (referred as job seekers now onwards) can perform following operations:
- Register with the web site.
- Post their resume.
- Modify their resume.
- Search for job postings.
- Browse searched job postings.
- Add job posting to their favorites list.
- Add frequently used searches to their favorites list.

The employers can perform following operations:
- Register with the web site.
- Enter profile of their company.
- Post one or more job postings.
- Modify the job postings.
- Search the resume database.
- Browse searched resumes.
- Add resumes to their favorites list.

2. JOB SEARCH THEORY

In a dynamic labor market, the process by which people find new jobs has importance to policymakers and scholars also. Policymakers have made attempts to design training and other programs to help match an individual's skills with the requirements of potential employers. Job-search theory attempts to propose strategies for making optimal employment decisions by considering factors that determine individual's demands and their prospect for finding an acceptable job offer Job search models are measured in both discrete and continuous time and a simple model can be used to represent the basic search behavior of an unemployed worker where the intent is to maximize expected utility . This research focuses on Discrete Time Job search. In Discrete Time Job search the individual is interested in choosing a policy (i.e. a sequence of decision rules) that determines whether or not to accept any particular job offer. The eventuality of the job offer is referred to as the outcome and is dependent on preferences of the searcher such as skills, pay, location of the employment opportunity, and the willingness of the employer to employ the searcher. The review of job search theory provides the basis for a discussion on agent-based utility relevant to the job search process.

3. INTELLIGENT AGENT BASED JOB SEARCH SYSTEM

Although online job search sites have greatly improved the job acquisition process there are still challenges in providing a qualitative approach to job search, providing a job best suited for an employee. The literature reviewed confirms that the technologies exist to create a system that improves the job search process using well founded techniques such as utility theorem applied to autonomous agents, increased accessibility through the use of mobile technology. This enables efficient agent communication between the mobile device and the multi-agent environment.

• *Intelligent agent (instead of human agent) to perform the job search operations by interacting with employer and job search coordinator agents*

• *Agent based utility concept to provide suitability profiling based on configurable factors such as distance from work,*

days and shift requirements, work environment, safety and hazard considerations, remuneration, skillset, etc.
• *Employ fuzzy preference rules, to make proper decision in getting a list of jobs corresponding to the user desired specification.*
• *Enable past and current employees to profile employers based on configurable metrics*

Let us now discuss the design roles and responsibilities of these components in the architecture.
The Intelligent agent based Job Search design consists of the following intelligent agents. Let us
now briefly consider these agents:

Administratot –
The administrator performs the activities of a human agent for job search and is a key entity in the process. The Administrator primary responsibilities are:
Education Levels:- Using this option administrator can add/edit/delete education levels.
Experience Levels:- Using this option administrator can add/edit/delete experience levels.

JobSeeker –
This agent is the brain behind the job search process and is equivalent in role to online job search sites, local newspaper and printed media, etc. as it interacts with employer agents to acquire job listings
This agent's primary responsibilities include:
Post Resumes
This option allows job seekers to post their resumes. One candidate can store only one resume in the database.
Search Jobs
Using Search Jobs option job seekers can search for available job opportunities from the database.
My Favourites
When you search for jobs the results can be stored as your favourite jobs in the database. In addition you can also save the search criteria as your favourite search criteria.

Employer–
The employer agent models some actions and responsibilities performed by the employer. The main activities are:
Post Jobs
Using these option employers can post job opportunities in the database. These opportunities can be searched by the job seekers.

Search Resumes
Employers can search available resume database through this option.
Company Profile
Employers can also specify the profile on the company.
My Favourites
When you search for resumes the search results can be saved as your favorites in the database.

Job Search Implementation
There are several scenarios that are possible from the discussion above, however the following
are considered with results presented:
1. Exact match in same or another location
2. Approximate match in same location with salary mark up and down.

3. Exact match in same or another location with best matched allowances and benefits
4. Any salary match.
In Fig. 1, the user configures the search preference system by fixing the industry as 75% important, occupation as 100% very important and job type as 0% unimportant and also salary mark up and mark down range as 27 and 33 respectively. This is the utility transformation form that is used to guide the priority of presentation of job to the users that makes it easier for the user to select the appropriate job and apply. Fig.2 shows the Google map to select the location and country where he wants to search the job.

Fig.1. Configure Search Preference Screen.

Fig.2 Google Maps- Location Selection

In Fig.3, the applicant agent now enters the search criteria which inlcudes the Country and city from Google Map. Also the other criteria like Salaray range as 20000 to 40000, Industry as Accounting, Education as Associate Degree, Job type as Full time, Career level as Expereince and Rating period as six months. Now that the search criteria is submitted, the Job search agent is started from the Andoird handset that queires the database to match the user criteria to retrieve the jobs and list to the user's handset based on search preferences system set. In here the search agent finds there exists no job that matches the criteria in Kingston, Jamaica and possess the intelligence to match in another location i.e St. Mary with same criteria. The agent now finds one job that matches his criteria and produces the result with salary range of 26,000 to 32000 with rating of 4 out of 5 as shown in Fig.4. Fig.5 shows the full details of job with complete salary package and so.

Fig.3. Search Agent Screen -1

Fig.4. Job Search Agent Results-1

Fig.5. Full Job Details.

Let us consider second scenario, shown in Fig.6 where the search Agent uses the salary mark-up and mark-down criteria applied to the salary range of 40000 to 50000 to provide a margin ratio in percentage for an increase and decrease of the upper and lower limits of the salary range specified in the search. With a markup of 27% and markdown of 33%, the system is expected to lower the lower bound by 33% and increase the upper bound by 27%. The search Agent searches for software job in Computer Industry for a salary range of 40000 to 50000 in location Kingston, Jamaica. The search agent finds Jobs in computer industry by adding salary mark up and marks down and produces it to the user's Handset as shown in Fig.7. Fig.8 shows the Rating breakdown for 6 months rating of the Employer by previous employees.
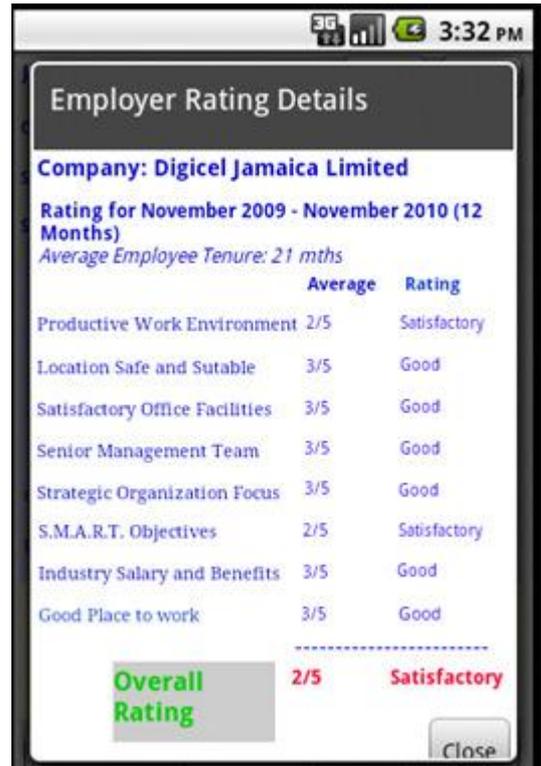
Fig.6. Search Agent Screen-2

Fig.8. Rating details breakdown

Let us consider third scenario as shown in Fig. 9 where the user searches for software Developer job in Computer industry for any salary range but with additional details like Medical, Housing, Relocation and Transportation allowance within the same location i.e. Kingston. The agent here finds Application Engineer job that matches his criteria in Kingston with salary mark of 36000 to 40000 and also another Senior Software developer with salary of 45000 to 60000 with best matched facilities as shown in Fig. 10 and 11. The user selects the senior software developer job but finds one allowance i.e. Relocation as not available but with a higher salary range. Salary values of zero allow matches of all salaries

Fig.7. Job Search Agent Results-2

Fig.9 Search Agent screen-3.

Fig.11. Full Job Details

Let us consider fourth scenario as shown in Fig.12 where the user searches for Accounting job for any salary range but with additional details like Medical, Housing, Relocation, Return Airfare and Transportation allowance within the same location i.e. St. Mary. The agent here finds Accounting in St. Mary with salary mark of 26000 to 32000 as shown in Fig.13 ignoring the facilities as shown in Fig. 14.
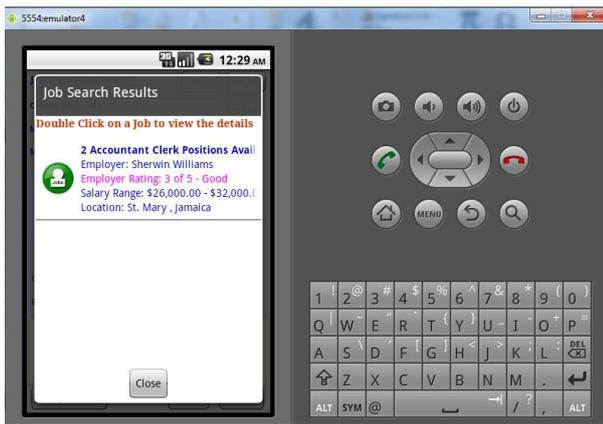

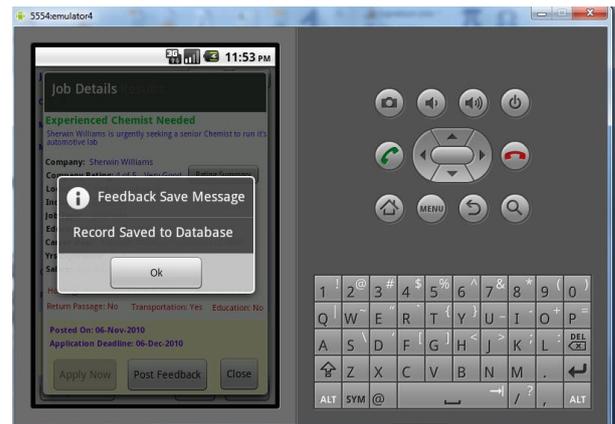Fig.12 Search Agent screen-4

Fig.10. Job Search Agent Results-3

Fig.13. Job Search Agent Results-4

Fig.14. Full Job Details

In our system, it is possible for the user to submit feedback about the employer as an existing or past employee too as shown in Fig. 15 Fig.16 shows the feedback recorded in Central database which the employer has no control over it. This feedback will be recorded in database after verifying the user credentials with the employer to make sure no user who has registered with the system and not working with this past employer of the industry is not submitting the feedback.

Fig.15. Employer Job Feedback Form

Fig.16. Feedback submitted

4. 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 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 which has been published elsewhere. 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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