A New Approach for Automated Job Search using Information Retrieval

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Abstract

Cost effective and high quality are the ultimate fundamentals of software engineering; Thus, Searching for the most appropriate job is fulfilled these fundamentals. In this article, the cost effective fundamental is accomplished carefully through Automatic Job Search (AJS) software to effortlessly and quickly assist applicant to obtain high quality job. AJS firstly searches all suitable opportunities for applicant based on his curriculum vita (CV) in all online advertisements available then a list of proper jobs will be displayed with links for each job corresponding to parts of CV. Moreover, AJS searches all applicants? CV and presents to employers a list of candidates who could fit the vacant positions or jobs then presents a list of jobs with link to their correspondent employers to Job seeker.

Index terms— part of speech, classification, tagging, patterns.

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I.

1 INTRODUCTION

ertainly, independence and professionalism are very high intents. Job seekers are usually interested in attaining these requirements. Working independently, is among many ways of achieving the aforementioned requirements. Such an approach requires an appropriate position with cooperated employers and Job seekers. Therefore, every user can demonstrate his professionalism to work in the expected job.

Many ways are available for either job searching or job offering these are announcement in traditional media, recruitment agencies, headhunting, job sites and others [2]. Upon the job searching process, usually, the job seeker tries to find the Job that meets his demands. Currently, Jobs' opportunities are highly competitive based on corresponding qualifications and capabilities. Yet, job search techniques offer jobs' seekers to find his expected Job [6]. Typically , in the process of searching for a job the applicant submits the job application which will be processed by the job offering firm [7]). It is obvious that this process consist of two sides.

The first one, is the job seeker who is usually looking for getting the best available job that satisfies certain specifications . While, the job offering firm seeks for highly qualified and skilled employers who could fit the vacant position. However, meeting the demands of both sides is a tricky and complicated task which requires trough and elaborate analysis [3] One of the available applications that are used for performing such an analysis is the Application Tracking Systems (ATS) [4]. ATS is the applications that enables the electronic handling of

44 recruitment needs. ATS is somehow similar to Customer Relationship Management system (CRM) while CRM
45 capable of managing relationships with candidate for the job [5] Nowadays, large companies use at least just part
46 of the prepared forms of ATS to collect candidates' applications and manage these applications. Some companies
47 use traditional ATS systems (e.g. HR in the IT industry proofing systems use programming skills of candidates)
48 to perform this process.

49 The primary function of the tradition ATS is to ensure the collection and storage of data in a central database.
50 Applications of candidates are normally collected by the external application forms provided by the ATS for the
51 company recruiter. Most owners of ATS sites collaborates with producers ATS applications and thus enable their
52 customers to migrate data from one system to another.

53 As stated above, The problem in most of these systems is utilizing databases, which leads to the loss of some
54 important information for job seekers. Our proposed system tries to solve this problem by using natural language
55 processing, and information retrieval techniques, by using the keywords from the job description in job seekers'
56 CVs and cover letter with job announcements to increase the chances of returning a match from company's
57 website (careers /employment page) and job seekers documents.

2   II. Proposed System

59 Our Automated job search (AJS) searches all job opportunities documents of all advertisers, searching within job
60 seekers' CVs and find common links between them. The outcome of this process is to make a list of job seekers
61 within the specifications required in the job opportunities documents, as well as a list of proposed functions
62 within the qualifications for job seekers .

63 AJS searches job seekers' CVs for the important information needed in the proposed job such as qualifications,
64 work experience and education. AJS system solves many occurring problems using the database, by using the
65 keywords paraphrasing job requirements. AJS employs the saved keywords and Tahseen A. Al-Ramadin ? ,
66 Malek Al-ksasbeh ? & Moha'med al-Jafreeh ? their synonyms and acronyms in the table. Table (1) lists all the
67 professionalism that will be searched in.

68 Table **??** : lists all the professionalism that will be searched in AJS takes into consideration many parameters
69 that help both of the job seekers and the job offering firm in obtaining an optimum decision based on the
70 requirements for both parties.

71 Our new system is expected to produce different results with different sentences which make the output
72 dynamic and not limited to a single template as other research. Moreover, AJS follows the information

3   Classification

74 Jobs Titles retrieval and text mining techniques methodologies to extract information with intelligence trends to
75 deeply mine the user C.V. and from the job announcement; in terms of Part of Speech (POS) and tags; these
76 significant features that used for information extraction.

77 In addition, some of indicator words used to recognize the proper matching.

78 As demonstrated in figure **??**, it can be seen that our model consists of two algorithms; the first one deals with
79 the data were provided by an interested firm, while the second one takes inputs were provided by a job seeker.
80 Aalgorithm 1 are used to find a list of candidate qualified persons for a specific job in the organization, first of
81 all the announcement for the job is analyzed to finding the job title, the job descriptions, the qualifications, and
82 experienced for the job.

4   Algorithm 1 for employer

84 AJS search the web and find any CV that match this properties which will be as follow:

85 ? After finding C V with the job classification, splitting this document to tokens. ? By using tagging and part
86 of speech, if any job is founding matching the qualification of the person, then add this announcement to the set
87 of candidate person, the rules and the features used to extract the required information, A set of P.O.S patterns
88 was extracted by examining the job seekers C.Vs. and the announcements. Ppatterns are used to be one of the

89 ? This search will be continuing for all CV documents.

90 The procedure for algorithm 2 is explained as shown in the following sequence.

91 As shown in the previous algorithm, the person who seeks about a job he/she will link his CV web page to
92 AJS, the AJS will analyzing this CV and find the proper job classification and there synonym and acronyms
93 from Table (1).

94 Searching for all announcement documents with the job classification will be as follow:

95 ? After finding document with the job classification, splitting this document to tokens. ? By using tagging
96 and part of speech, if any job is founding matching the qualification of the person, then add this announcement
97 to the set of candidate jobs, the rules and the features used to extract the ? required information, A set of P.O.S
98 patterns was extracted by examining the job seekers C.Vs. and the announcements. patterns are used to be one
99 of the features that help finding the optimum job title. ? This search will be continuing for all announcement
100 documents.

5 III. Results

The result from this system will be to lists (reports) one for the job seeker, and the other for the organization.

The second list that is presented for the organizations that search for a qualified persons to fill a job, the list show all the candidate persons and their qualifications and experiences for this job, table 2 The second list will be for the person who tries to find the optimal job for him, so there will be a list of all organization and the jobs description and the contact ways for this organizations that match the qualifications and experience for this job seeker. Table 3 gives an example for this list.

6 Conclusion

Our proposed system AJS produced two lists; first list is presented for each Organization that contains their vacant jobs and corresponding with qualified job seekers' contacts who have appropriate skills and experience, while second list is presented for each job seeker who linked his CV by AJS with suitable vacant jobs and correspondent organizations' contacts.

7 IV.

8 Future Work

The researcher is expected to extend this system by adding third party as administrator who prioritizes the two lists based on the experience and qualified skills of job seekers for organization list and based on organizations' offers for job seeker list. The administrator uses right decision support system to make the prioritization [1] [2]
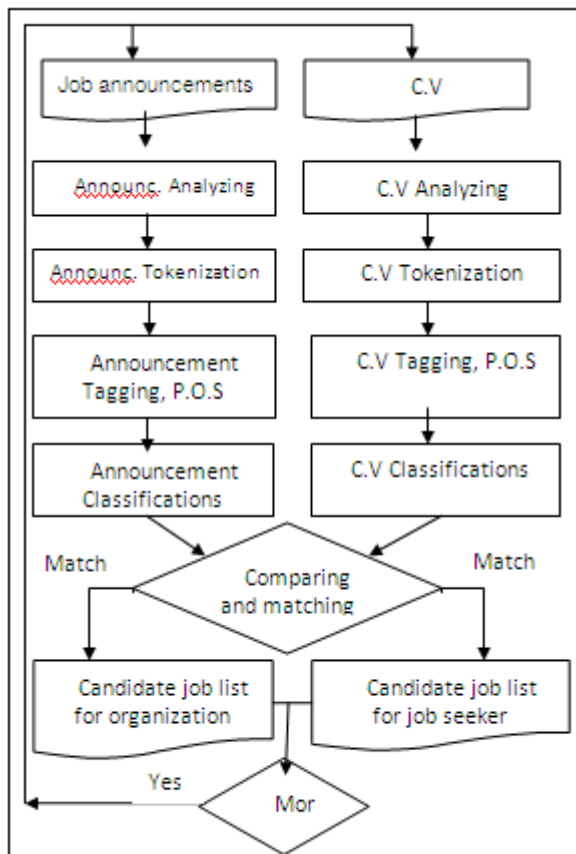

Figure 1:

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Fig 1 : AJS model

Figure 2: Global

Category	Jobs
Management	president, vice-president, executive officer (CEO); director, deputy director, managing director, financial director, marketing director; general manager, assistant manager, manager; personnel manager, production manager, marketing manager, sales manager, project manager; supervisor, inspector;
Office	office clerk, receptionist, secretary, typist, stenographer;
Banks	banker, bank officer, accountant, bookkeeper, economist, teller, cashier, auditor;
Medicine	doctor, physician, family doctor, general practitioner; eye specialist, ear specialist, throat specialist, heart specialist; cardiologist, surgeon, pediatrician, psychiatrist, dentist, dietician, pharmacist, veterinarian; nurse, paramedic;
Restaurants	chef, head cook, cook; maitre d', headwaiter, waiter, waitress, bartender, barman;
Sales and stores	sales representative, sales manager; salesperson, salesman, saleswoman, salesgirl, salesclerk, cashier; seller, buyer, wholesale buyer, wholesaler, retailer, distributor, advertising agent;
Construction Science Computer & internet	computer programmer, computer operator; systems analys...

[Note: art director, actor, actress, cameraman; writer, author, playwright, dramatist, scenarist; journalist, reporter, correspondent, photographer; designer, fashion designer, dress designer, interior designer, furniture designer, graphic designer; School and college principal, dean, professor, teacher, student, pupil; schoolteacher, college teacher, university teacher; head teacher, senior teacher; English teacher, history teacher, maths teacher (BrE), math teacher (AmE), music teacher;]

Figure 3:

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Figure 4: Table 2 :

3

AJS

Figure 5: Table 3 :

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