(HR)^2: An Agent for Helping HR with Recruitment

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ABSTRACT

Finding the right candidate for a job has always been a hard task that Human Resources (HR) managers of a company face regularly. In this paper, the authors propose that the field of multi-agents can play a significant role in a) elaborating the job description b) getting an applicant to submit competencies relevant to the job c) shortlisting applicants and d) identifying the right hire. They propose the model of (HR)^2, an automated agent for Helping HR with Recruitment that could perform the following key steps: (a) Generate Specific Position Contract (SPC) from a Master Position Contract (MPC) using Infer1 procedure (b) Use the SPC to provide a graded and iterative feedback to applicant using Infer2 procedure. They situate (HR)^2 in the context of LinkedIn. To enable better inference, they propose to modify the information being collected by LinkedIn, using the ontology provided by the free online database O*NET. The (HR)^2 agent will be able to help the employer rank order the SPCs and identify areas for assessment, potentially easing the interview process and leading to high quality hires.

Keywords: Human Resources, Inference, LinkedIn, O*Net, Ontology, Recruitment, Software Agents, System Design

1. INTRODUCTION

A virtual intelligent agent or a virtual agent in short (terminology more commonly used in the chatbot industry), is an autonomous entity that can make intelligent conversations and negotiation with one or more human or virtual agents, in a specific domain. Typically these agents are built to perceive the needs of other agents or humans in the system and to perform some service. Such an agent may consist of a dialog system as well as a knowledge base and inference engine to provide specific expertise to the user. In today’s connected world, it may also acquire just-in-time information from other sources on the internet with varying degrees of trust. Some popular virtual agents have on-line avatars to make people feel as though they are talking to a person. Softbots and Chatbots are a kind of virtual agents (http://www.chatbots.org).

Virtual agents have been used in several domains: E-commerce, automated auctions (Karp 2004), customer service, e-learning, and network security (nGenius Virtual Agent) are some of the varied applications of these agents. Examples are Apple’s Siri, Braina, Google’s Google

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Now, Amazon Echo, Microsoft’s Cortana, Samsung’s S Voice, LG’s Voice Mate, BlackBerry’s Assistant, SILVIA, and HTC’s Hidi. Chatbots use very advanced Human Computer Interaction (HCI) technologies and many times considerable effort is spent in making the Chatbot perceive and display human emotions and other such functionalities. Very advanced and mature technologies are available for developing virtual intelligent agents (Paschke et al. 2007, Kraus et al. 2014, Lochner & Wellman 2004).

One area where such virtual agents can help is recruitment (Hassan et al 2012). As the employment market place is shifting on-line and timelines of projects and staff requirements are shrinking, automation is becoming essential. However most of the hiring is still dependent on human element making it both expensive and time consuming. Human Resource Management is such an important aspect of both knowledge intensive and labor intensive societies, that it is called Human Capital Management.

Finding the right candidate for a job has always been a hard task that Human Resources (HR) managers of a company face on a regular basis. Technological changes and new geographies of operations have been so fast in the 21st century that it is becoming increasingly hard to train HR personnel to keep pace with the number of technologies not just in the technical sector but also the non-technical ones. In this paper, we take the position that the field of multi-agents can play a significant role in reducing the burden on HR through automating some of the functionality that is involved in the job recruitment process. The key advantages would be both in reduction of time line of the recruitment process and the manpower training expenses thereafter. We can broadly see the tasks in the recruiting process as a) elaborating the job description b) getting a prospective hire to submit his/her competencies relevant to the job description c) shortlisting applicants and verifying the competencies through a structured process like interview/assessment/references d) finding the right candidate to hire. To enable automation of this process, we propose the development of (HR)^2, an automated agent for Helping HR with Recruitment. (HR)^2 should interact, infer and assess whether an applicant can be considered for a position for which it should perform the following key steps: (a) Generation of Specific Position Contract (SPC) from a Master Position Contract (MPC) named Infer1 procedure in our scheme. (b) Once the SPC is (auto) filled (using candidate’s resume), perform Infer2 procedure which will identify deficient areas and provide a graded feedback to the candidate in an iterative fashion. We situate this agent in the context of the popular professional networking portal LinkedIn. To enable better performance of the (HR)^2 agent using LinkedIn, we propose a few changes to the information currently being collected by LinkedIn (referred to as the Master Position Contract (MPC) here), based on the free online database O*NET. (HR)^2 will also be able to rank order the SPCs based on the matched areas and identify the competencies to be tested or verified at the interview stage.

In addition to recruitment, the training, retention and growth of employees are challenges in today’s volatile economy. This paper explores the specific area of recruitment which we believe has the potential for using intelligent agents. Towards this end, we build upon an existing model for representing the skills of the candidates which facilitates automated reasoning.

2. STAFFING: A STRONG AREA FOR AUTOMATION

Staffing that depends on recruitment is an area which has seen rapid changes in the past few decades. Jobs are no longer ‘life-long’ - either from employer or employee perspective. Organization structures have changed and continue to change in the flux of acquisitions and mergers and new geographies of operations.
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