An Agent-Based Framework for Personalized Learning in Continuing Professional Development

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ABSTRACT

In order to stay competent and update in the fast changing landscape of technological advances, professionals nowadays are expected to continuously upgrade themselves of professional knowledge and expertise in their respective fields. Many professional organizations stipulate that their members should take part in a minimum number of hours or training units of Continuous Professional Development (CPD) activities in order to stay qualified for their membership. The requirements of CPD for modern day professionals who are very much mobile and work within tight schedules point to the need of an asynchronous learning environment that provides a learner-centered approach and offers learners greater flexibility and choices. In this article we argue that “Personalization Learning” (PL) that exploits the abundance of information and e-learning materials on the Web can be harnessed effectively to serve the diversity of CPD training needs. Moreover, we specialize in the concept of PL to Personalized CPD Learning and highlight the emerging technologies that are relevant to the development of personalized learning for CPD. We further proposed an agent-based architectural and conceptual framework for a Personalized CPD Learning Portal (Personalized-CPD) which integrates these technologies to provide supportive functions for professionals to conduct CPD activities in a personalized manner.

Keywords: agent technology; continuous professional development; ontology; personalization; Web-based individualized learning

INTRODUCTION

The fast pace of development in technological advances has fused the rapid deployment of new technologies in many fields. This, in turn, has increased the demand for practicing professionals in many areas to continuously update and upgrade their professional knowledge and expertise in order to stay competence and effective in discharging their duties at work.
Many professional and learned societies nowadays either encourage or require that their members should take part in a minimum number of hours or training units of formal continuous professional development or CPD annually. In general, CPD does not only restrict to the narrow domain of technological updating but also covers the wider area of professional competence that includes leadership skills, project management, legal and ethical aspects, occupational safety and communication skills. Given the abundance of potentially useful learning content now available through the Internet, it is therefore natural that such resources should be tapped for supporting CPD for the various professions. In an era of e-learning, Web-based learning should be an indispensable element of CPD activities in addition to the other activities such as participation in seminars, formal training courses, conferences, e-learning, and industrial visits. As CPD is essentially an activity that addresses the need for life-long learning for an individual, the choice of CPD materials should be based on an individual’s training needs and his/her current competence profile.

With the advent of Web-based technologies, “Personalization Technology” (PT) is emerging as an enabling technology for serving the information need of different users according to their individual needs and profiles. The essence of Personalization in Web-based learning has been summarized by The Personalization Consortium as: (1) encourage learners to learn by anticipating needs; (2) make the interaction efficient and satisfying for both the organization and the participants; and (3) build a relationship that stimulates learners to return for consistent and progressive learning. Although the general concept of Web-based learning through PT has been widely recognized, very little technical work has been done on realizing this vision (Fok & Ip, 2004). The concept of Personalization in e-learning should also encompass the ability to intelligently search for, compile and sequence learning materials directly from the Web to meet the needs of a particular CPD activity. An example is to search for and then compile a package of courseware for communication skill development for a professional or to automatically identify the elements for CPD given a professional’s existing competence profile. For example, a course on information security for a person who has worked as a system administrator but has recently been transferred to a role of an Information Officer in a company for which specific job-related knowledge and skills are required.

After giving an overview of current personalization technologies and personalization needs in CPD, in this article, we propose a multi-agents-based conceptual framework of personalized learning for CPD that enables an integrated learning environment to foster individual and self-directed learning.

PERSONALIZATION NEEDS IN CPD

Without loss of generality, we will discuss the personalization needs in CPD from the perspective of IT professionals, however, the observations made and the resulting conceptual framework for a Personalized CPD portal is general and is applicable to a wide range of industries.

Every person possesses distinctive collection of talents, abilities, and limitations. Learners should be treated as individuals rather than homogenous group. Within the context of CPD, professional development activities are usually identified and initiated either by the person concern or his/her line-manager as part of the appraisal process. An asynchronous learning environment that provides a learner-centered approach is closely relevant to the requirements of CPD and modern days’ professionals who are very much mobile and operating within tight schedules. Such an environment offers learners greater flexibility and choices.

Personalized services in Learning enable learners to engage in what they want to learn and learn in their chosen environment. Personalization technology helps to automate the learning processes so that it sends appropriate or relevant content to individual learner for individual purposes at the right time. Personalize-CPD is the ability of a Web-based system to match retrieved information content to a personal profile. This content can be set explicitly by the user or derived implicitly by the system.
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