A PROPOSED FRAMEWORK AND ALGORITHM TO BUILD AN INTEGRATED INTERNSHIP VIRTUAL MARKETPLACE SYSTEM

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ABSTRACT

With the emerging technology in semi-structured or ill-structured problem solving becomes available; many traditional problems can be more effectively and efficiently handled. One such problem would be a large scale Internship Virtual Marketplace System (IVMS). This system attempts to overcome the limitations of traditional college internship management programs to enable students to find ideal internship opportunities to gain sufficient practical skills or knowledge before they start their first job. It is a vehicle for effective allocation of internship/job opportunities on a large scale (e.g., state-wide). With NoSQL technology (such as MongoDB) and document search and filter technology, an IVMS system can be designed to be efficient, automated, low cost, and more effective matching of internship opportunities with students' knowledge and skills.

INTRODUCTION

Internship opportunities traditionally are handled discretely on each campus and have many limitations or problems. These limitations include distance, physical locations, duration, fixed or non-flexible starting time (typically done during summer break), high cost, and late stage student status (summer internships typically offered to junior or senior students). The real consequence is that a student may not have ideal internships or cannot gain sufficient practical skills or knowledge before they start their first job.

Emerging technology has made it possible to tackle traditionally challenging problems. MongoDB is such a technology which is considered an open-source, cross-platform document-oriented database system. It is also called a "NoSQL" database, which goes beyond the traditional table-based relational database structure to prefer documents with dynamic schemas, making the integration of data in certain types of applications easier and faster.

With other advances in information technology, such as document filtering, big data evolution and market design theory, an Internship Virtual Marketplace System (IVMS) can be created to providing a promising solution to the problems facing the traditional internship management programs. It allows students to tap internship opportunities regardless of distance, physical location, timing or duration. It attempts to overcome the limitations of traditional discrete internship management programs to enable students to gain sufficient practical skills or knowledge before they start their first job.

AN INTERNSHIP VIRTUAL MARKETPLACE SYSTEM (IVMS): DEFINED

The IVMS is a vehicle for effective allocation of internship/job opportunities on a large scale (e.g., state-wide). It emphasizes the life cycle implementation of internships in the cyberspace, from initial internship postings, student applications, to automated and intelligent data mining and match making, to day by day internship supervising and reporting, to the end of the internship. On the other hand, an IVMS is needed for multiple academic disciplines (especially those specialty-oriented disciplines such

as medical, biological, pharmaceutical) to balance the supply and demand or solve the supply-demand crisis [3].

The theoretical foundation of the IVMS is the latest “market design” theory applied to the practice of student-internship match-making [1]. An essential and successful aspect of modern market design theory is the efficient and effective resource allocation without involving money and prices.

Technology wise, the IVMS is designed based on modern NoSQL database technology, document filtering such as dtSearch, data warehousing, and data mining theory and technologies, as well as the advances in multi-platform end-user devices and the mobile Internet. The challenges to overcome are data integration, data modeling and data mining algorithms. The big data revolution and ubiquitous computing are providing the needed eco-system for the IVMS system to grow. It has become practical to create a central internship data warehouse to support the creation of a large scale state-wide virtual internship marketplace.

IVMS: THE MAIN FUNCTIONALITIES

An IVMS system will be designed to be efficient, automated, low cost, and more effective matching of internship opportunities with students’ knowledge and skills. Given the complexity of IVMS, a prototype will need to be developed as a proof of concept before committing sufficient resources to start a large scale implementation of IVMS.

The IVMS is a large scale system. It aims at the effective resource allocation on a large scale. It is scalable and the scalability must be very good.

IVMS will be dynamic. As soon as new data is entered to the system, the virtual marketplace (the data mining process) will be started.

IVMS is a data warehouse with OLAP capability. As such, data can be mined along multiple dimensions. Different data cubes can be created.

CONCLUSIONS

Overall, the IVMS is designed to integrate the discrete and smaller internship listing databases (located in each campus) in to a central data warehouse to achieve effective and efficient resource allocation on a large scale. A successfully implemented virtual internship marketplace system (IVMS) has the potential to balance the supply and demand as well as increasing the chance a student being employed.

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