Mentoring with Technology – Software Agents

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Abstract: Mentoring undergraduate students in Information Technology Fields is an important element in their successful transition from academia to the workforce. We have collected data and have created a prototype of an interactive mentoring system that will be shown at the conference.

Introduction

Mentoring undergraduate Information Technology (IT) majors to enter the workforce as productive participants is a critical concern of any learning environment. Learning the basics of programming and networking alone does not translate to a successful transition from student to working professional. In order to create a more widely available mentoring system as well as a uniform approach to the mentoring needs in IT related areas it is important to first identify the types of mentoring activities that will be useful, and second, create an environment that can support this mentoring and make it available to a larger audience. This paper presents an update on our activities at the mid-point of our project to create a software agent based mentoring system.

The goals of our project are to:

1. Observe students on internships interacting with their supervisors and colleagues. Observe meetings related to software in local companies design (since the project is designed to help software designers). Interview students and members of the Information Technology Workforce dealing with software design.

2. Identify best practices in mentoring by analyzing the observations and interviews through an Activity Theory framework. Specifically catalog questions and answers that students and mentors frequently deal with. The issues and concerns that students have before entering the workforce and what they observe when shadowing or working on internships. Identifying information that is helpful and those that are not useful.
3. Create a system that will be used in preparing students to enter IT internship programs as well as entering the ITW.
   a. To familiarize IT students on the culture of the ITW by providing an interactive collaborative AT software agent based computer system that relates the stories of IT projects as well as converses with the students on their concerns.
   b. To increase the number of women entering the IT bachelor's degree programs by mentoring, providing developmental experiences, encouragement, and self-confidence in the IT related applications using the agents system.
   c. To improve the experiences of students entering internship programs in the IT field by allowing them to gain self-confidence and experiences in the IT culture using the agents system.

Data Gathering Techniques & Software Agents Knowledge Base

Current approaches to programming software agents has been to collect think-aloud data (which give rules to solve problems) as well as conducting observations of interactions between people to extract more complex data. These are also described as naturalistic observations (Graesser, 1998). This project uses more holistic methods to collect, analyze, and use data for the design of the software agents. They include Activity Theory Analysis of Software Design projects and interviews with members of the IT field, and students.

Prototype of Software Agent Mentoring System

The prototype has been constructed using a Microsoft Access database with the front end created using active server pages with SQL statements to access the database. The application and database are held on a Windows 2000 Server with IIS webserver environment. The poster demonstration will showcase our methods and prototype.

References