EconPort: A Digital Library for Microeconomics Education

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Abstract

We present the EconPort system (www.econport.org), a digital library for Microeconomics education that incorporates experimental economics software and automated e-commerce agents.

Introduction

Courses on Microeconomics play an important role in economics, social sciences, business, and engineering curricula. Recent research has shown the overall success of integration of experiments into undergraduate microeconomics courses [1, 2]. We are developing a Digital Library-based approach to build an extensible and scalable collection of Microeconomics related contents and an integrated online teaching environment with experimental software support. We present major components of the resulting digital library, called EconPort, and discuss digital library challenges applicable to other applications.

EconPort and Related Technical Challenges

EconPort consists of two major components, a Microeconomics education content collection and an online experimentation environment to support effective Microeconomics teaching and learning.

Microeconomics Education Contents: An integrated Microeconomics curriculum is being created in EconPort. Related online experiment materials including experiment description, instructional manuals, and downloadable experimental software are also included in the collection to form a “live” text for experiment-based Microeconomic education. EconPort currently contains materials on the following topics: auctions, common pool resources, fairness and reciprocity, game theory and industrial organization.

Experimentation Environment: EconPort provides a Web-enabled infrastructure to set up, launch, and run a wide range of experimental software. The instructors can select relevant economics experiments, configure the parameters and treatments, and launch the experimental server through the portal. Students can then start the client-side experiment software through the Web to participate in these experiments. When the experiments end, the instructor can use post-experiment analysis tools to analyze and visualize the experimental data. Experimental software with support for simple execution automation agents have been implemented for English, Dutch, First price and Second price auctions.

Developing EconPort poses significant digital library technical challenges, because a variety of library contents are involved, including standard documents and different “active” objects like experiment software, software agents, and e-commerce services. We propose to leverage recent developments in Web Service Description Language to develop an XML schema to represent these objects in order to support effective retrieval and management. This extension is also potentially applicable to other digital library applications where rich dynamic contents exist.

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References
