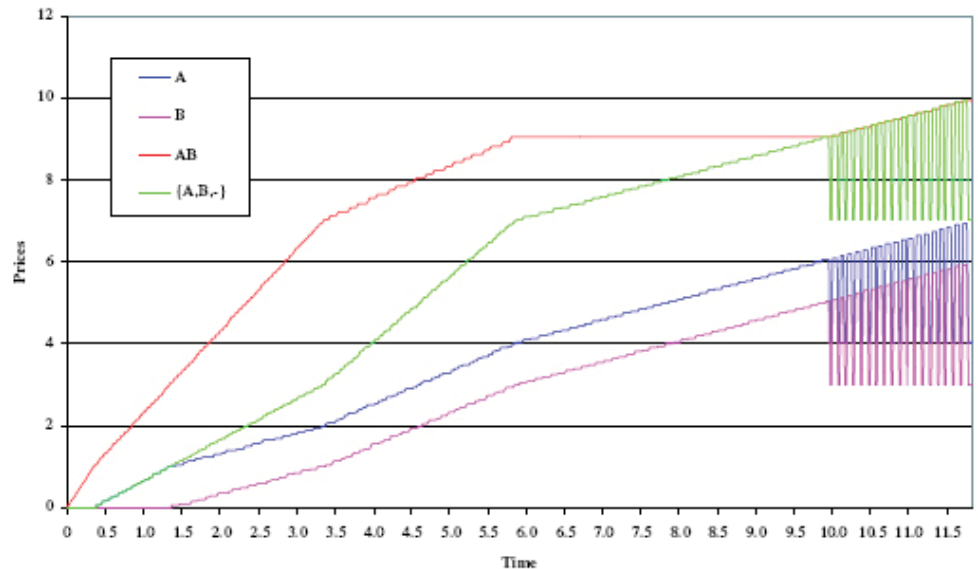computer science

MULTIAGENT SYSTEMS AND SERVICE-ORIENTED COMPUTING LAB

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The prices over time when proxy agents bid with bid increment 0.05. The prices of A, B, and AB, and the value of the allocation are plotted.

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The mission of this laboratory is to discover, model, study, and apply principles of computing needed for emerging applications. Such applications include ubiquitous information access, gaming and entertainment, and e-business. Their unifying theme is that they cannot be carried out by a standalone system—they involve interactions among multiple people and software modules. Interaction among heterogeneous (independently designed) and autonomous (independently operated) subsystems is the key. Current approaches don't handle interaction well.

Service-Oriented Computing is a new way of developing software systems that does. Just as in real-life people provide and use each other's services, so too in the virtual world. Moreover, virtual services easily can be combined in novel ways. The idea of "mashups" is an example of such service composition.

To mash up complex services where life and property are at stake, this lab develops sophisticated ways of describing, selecting, engaging, and collaborating with services. Our publications and software tools introduce novel ways to select services, including human-inspired social networks for creating trust; specify business protocols to enact businesses and virtual organizations to model businesses; and apply mathematical logic to verify that services and protocols are correct; and more.

Our work synthesizes insights not only from computer science but also linguistics, philosophy, organizational theory, and law.

We invite you to chat with us or look us up on the Web.