A Dialectical Approach to Enable Decision Making in Online Trading

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Abstract: Future e-commerce systems may involve software agents entering legally binding contracts and engaging in financial transactions through web services on behalf of humans. The Semantic Web Services enables software agents to automatically discover, invoke and execute online services in the Internet. However, the information exchange among consumers and providers in such a service is currently static. The online service description only describes required parameters (e.g. inputs, outputs, pre/post-conditions) and processes of a service. We consider the case of online auctions as web services. To extend the dependability and interactivity of such services, we have utilized the proof-carrying code paradigm and dialogue games to design a framework so that a buyer agent can automatically certify auction properties of interest. Our decision making framework combines formal proofs with informal evidence collected by web services in a dialogue game between a seller and a buyer. We have implemented our approach and experimental results have demonstrated the feasibility as well as the validity of this framework as an enabler for a buyer agent to enter or not an online auction.