NEGOTIATION AS A SERVICE: AN AGENT-BASED NEGOTIATION ENGINE FOR ONLINE BUSINESS

Yinping Yang*, Sharad Singhal^, Rully Santosa+, Shixing Yan, Yong Siang Foo*


{*yangyp, &fooys}@ihpc.a-star.edu.sg, {^sharad.singhal, +rully-adrian.santosa, ’shixing.yan}@hp.com

Traditionally, negotiation has been very much a human enterprise. We created an agent-based negotiation engine which provides software agents that serve as surrogates for human negotiators in bounded business tasks. As computerized agents can unambiguously capture a negotiator’s decision variables necessary for forming a negotiation strategy, the research prototype was used to effectively manipulate the effects of key strategy variables in agent-to-human negotiation experiments (Yang et al., 2009). Furthermore, the prototype was developed in a “software-as-a-service” model that allows an e-business owner to make use of negotiation services through an easy-to-follow web portal. This demonstration illustrates how to create and configure the negotiation agent as well as to embed the agent to an e-business owner’s web storefront.

Suppose A is an e-business owner dealing with multiple business partners. Instead of employing human sales personnel, A can choose to subscribe to a software agent provided by the negotiation service to handle routine negotiations on his/her behalf (Figure 1). To do this, 1) A logs in the negotiation service portal and creates one (or multiple) agent(s). The web interface shows four negotiation service modules: “Name Your Agent”, “Assign Your Agent the Negotiation Task”, “Tell Your Agent the Negotiation Strategy”, and “Specify Service Parameters”. The first three modules guide A to create a name for his/her negotiation agent, to set up task information (e.g., define issues, elicit preference and construct utility functions), and to customize strategy parameters (e.g., define bottom line utility, target utility, concession pattern, message accompanying offers) respectively. The last module instructs A to copy/paste a set of HTML code that embeds the agent in A’s web storefront. 2) These key strategic parameters are then stored in a repository. 3) These parameters are used with a strategy algorithm pool. 4) If a business partner B browses Party A’s web catalog and decides to use the negotiation function, B will be redirected to the negotiation service which handles the actual negotiation process with B on behalf of A. Once negotiation is completed, the service returns B to A’s website for confirmation.

Figure 1. Overall Architecture of the Negotiation Service Engine for e-Business Owners