Preface

This workshop explores the contributions of preference handling to artificial intelligence. Most problems studied in AI involve some form of choices, whether these are conflicting goals and alternative actions in planning and robotics, alternative interpretations in perception and natural language understanding, conflicting beliefs in belief revision, alternative hypotheses in diagnostic reasoning, multiple choices in combinatorial problems (such as configuration, design, auctions), agent choices in multiagent systems, group choices, or choices in reasoning and search strategies. Moreover, agents are not confronted with a single decision making problem of this kind, but with several such problems, which occur simultaneously and repetitively. Preferences provide a convenient way to coordinate a multitude of decisions and to ensure a globally coherent behavior even when the possible options are changing from situation to situation. As such, preferences guide human decision making from early childhood (for example, "which ice cream flavors do you prefer?") to complex professional and organizational decisions (for example,"which investment funds to choose?"). Hence, preferences are an essential element of the ongoing decision making processes of agents. Consequently, knowledge about an agent's preferences is necessary to understand the agent's behaviors, to communicate and to interact with the agent in the desired way, and to find consensus among multiple agents.

These remarks explain why preference models and preference knowledge are important in many fields of AI. Preferences have been used in multiagent systems, combinatorial auctions, diagnosis, design, configuration, planning, default reasoning, and many more. In addition to this, preference modeling and aggregation is central to decision theory, social choice and game theory — three subfields of economics, which are increasingly cross-fertilizing with AI. AI tasks often need new forms of preference handling beyond classic utility-based models. Recent work on preference handling in AI introduced preference models based on ideas from knowledge representation, such as graphical and logical formalisms. AI also introduced new means for reasoning about preferences and problem-solving algorithms based on preferences.

These innovations have led to a series of successful multidisciplinary workshops on advances in preference handling at AI conferences (AAAI-02, a Dagstuhl-Seminar in 2004, IJCAI-05, ECAI'06). This workshop not only continues these innovations, but brings the results back to AI problems and explores the promise of preferences for AI challenges. Many new preference handling methods have been elaborated; it is a good time to investigate potential applications or to report about implemented systems. The workshop is thus complementary to this year's multidisciplinary workshop on advances in preference handling, which will be held at VLDB 2007 later this year. The following web page seeks to inform about past and forthcoming events on preference handling:

wikix.ilog.fr/wiki/bin/view/PreferenceWS/WebHome

The workshop includes fourteen papers and one extended abstract. The papers apply preferences to a variety of AI problems such as e-commerce, auctions, intelligent assistance, winner determination in majority voting, game theory, search for solving combinatorial problems, configuration, meeting scheduling, geographic map generation, peer-to-peer networks, and conference paper assignment. Many of the papers address important questions concerning the elicitation, learning, and representation of preferences, as well as optimization under preferences. The workshop program reflects the variety of ongoing work on preference handling in AI. The workshop will therefore provide a good forum for discussing future challenges and perspectives of preference handling for AI. We welcome all participants to the AAAI-07 Workshop on Preference Handling for AI and encourage them to have stimulating discussions about this topic.

– Jon Doyle, Judy Goldsmith, Ulrich Junker, and Jérôme Lang