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Multi-Agent for Mass User Support

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Revised and Invited Papers



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Preface

This volume is the postproceedings of the Workshop on Multiagent for Mass User Support 2003 (MAMUS 2003). It consists of revised papers presented at the meeting and invited ones based on the program committee's recommendation. The workshop was organized in association with the 18th International Joint Conference on Artificial Intelligence (IJCAI 2003), August 10, 2003, Acapulco, Mexico. The aim of the workshop was to investigate new directions of multiagent technology and its applications to support mass users and society by using social coordination mechanisms in both the artificial intelligence and social science senses.

Multiagent and agent-based simulations have been providing new methodologies and viewpoints for studying societies. They are becoming effective tools for modeling and simulating social systems. On the other hand, the rapid progress of IT (information technology) such as ubiquitous or pervasive computing is bringing changes to communications, decision-making processes, and even possibly to how people conduct themselves in their daily lives. People in a ubiquitous computing environment would be able to access information networks, communicate with each other, exchange information, and obtain sensing data on an everywhere, anytime basis. Such an information environment is expected to open up a new application field where each user's utility is increased and the efficiency of the whole system (society) is also improved. This is the objective of mass user support. In order to realize mass user support systems, we need to investigate the problem from the two viewpoints of social systems and information technology. By social coordination we mean analysis of social systems from the viewpoint of balancing the utilities provided to individuals and the whole system.

Papers included in this volume are categorized as follows. The *theoretical background* section includes two papers that characterize mass user support and social coordination. Kurumatani discusses the characteristics of the problem and gives its formalization and analysis. Chen proposes CE Lab, a platform where both human and software agents work together, especially to integrate experimental economics, behavioral economics, and agent-based computational economics.

The *resource allocation algorithms* section has three papers. Cheng proposes a market-based resource allocation algorithm for information collection in emergency scenario. Kawamura discusses the Theme Park Problem, in which he analyzes the effect of information provision on many users. Matsuo proposes story-based planning that generates visiting plans according to users' intentions and preferences.

Traffic systems is an important area of applications for mass user support. In the *Mass User Support in Traffic Systems* section, Yamashita proposes an algorithm for large numbers of users to exchange their driving plans in order to

increase the utilities for individuals and the whole system. Shinoda analyzes the usability of dial-a-ride buses, especially their efficiency in large-scale towns.

Because mass user support essentially requires resource allocation among users, the problem can be formalized in the game theoretic sense as the simplest edge problem. The *game theoretic analysis* section includes two papers: Suzuki discusses role changes in the social dilemma game to manage limited common resources; Yamashita formalizes the dynamics of group formation mechanisms from the game theoretic viewpoint.

From the engineering viewpoint, it is crucial that we design large-scale systems that handle many communication and computation tasks in order to realize mass user support. In the section titled *Architectures for Social Coordination Mechanisms*, Amamiya and Pitt propose a multiagent system called KODAMA for managing individual digital rights for information trading. Murakami proposes Fairy Wing, which is a user profile accumulation system that works with RF-ID tags. Sashima proposes a multiagent architecture called CONSORTS for service coordination in a ubiquitous computing environment.

As the editors of this volume, we would like to thank the members of the program committee and the anonymous reviewers for their important contributions. We would also like to thank Akio Sashima for his typesetting of this volume.

Tokyo, February 2004

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