

Preface

In an increasingly complex world, a new wave of intelligent artificial assistants have the potential to simplify and amplify our everyday personal and professional lives. These assistants will help us in mundane tasks from purchasing groceries to organizing meetings; in background tasks from providing reminders to monitoring our health; and in complex, open-ended tasks from writing a report to locating survivors in a collapsed building. Some will offer tutelage or provide recommendations. Whether robotic embodiments or software processes, these assistive agents will help us manage our time, budgets, knowledge, and workflow as they assist us in our houses, offices, cars, and public spaces.

To realize the vision of truly useful assistants, four broad requirements must be met. First, our assistants must be personalized: they must learn and be advised about our preferences and adapt to our way of working. Second, they must be capable of learning from us new methods to solve existing or novel problems in their application domain, and to correct their behaviour when mistakes are made. Third, as a consequence, our intelligent assistants must engender our trust over an extended period of time, because their behaviour will materially affect our interests and well-being (and even our own behaviour). Fourth, they must become our partners, able to engage in joint, collaborative problem solving and decision making.

In all these capabilities, an essential aspect of the success of our intelligent assistants is their interaction with us and with other humans and agents in natural ways that are no more obtrusive than necessary. This interaction must be uniform and coherent over the various functions of the assistant, and be sensitive to the user's available time and cognitive focus, the interaction conditions and modalities, and subjective factors such as the user's mood.

This technical report features technical and selected position papers from a symposium that brought together practitioners and researchers of artificial intelligence, human-computer interaction, cognitive science, robotics, and assistive and agent technologies.

Developing intelligent assistants is a challenge that demands collaboration across disciplines. Designing interaction with these assistants

challenges us at the level both of fundamental concepts in human-agent communication and of applied research in system building. Hence, from a multi-disciplinary perspective, a key goal of the symposium was to identify the critical issues raised by interaction with personal assistants, the specific challenges faced, and the current state of the art. The ultimate and on-going goal is to progress towards the most useful paradigms, methodologies, and implementations for human interaction with intelligent artificial assistants.

Contributions to the symposium considered four broad topics of interest: collaborative problem solving, interaction principles and modalities, trust, and studies and comparisons of systems.

In addition to the theoretical and applied contributions of the participants, the symposium featured two invited talks. Brad Myers of the Human Computer Interaction Institute, Carnegie Mellon University spoke on “A User Acceptance Equation for Intelligent Assistants,” and Henry Lieberman of the MIT Media Laboratory addressed “Interaction Challenges for Agents with Common Sense.”

Sincere thanks is due to the organizing committee, especially to Pauline Berry and Ed Chi. We also thank the additional reviewers who assisted the committee in referring the papers, and the ever-professional staff at AAI.

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