ACL 2010

CDS 2010

**2010 Workshop on
Companionable Dialogue Systems**

Proceedings of the Workshop

15 July 2010
Uppsala University
Uppsala, Sweden

Introduction

The current state of dialogue technology has come a long way since its beginning in the 1950s: dialogue technology now provides interactive service agents, while research explores various aspects of multimodal and multiparty communication so as to improve natural and social aspects of dialogue systems. In this workshop, interest is focussed especially on dialogue systems able to act as Companions, i.e. software agents with advanced human language technology capacities, able to display and recognise emotion and aspects of personality as well as to interact with a user, possibly over a long period, learning about their needs and interests, performing services, entertaining, consoling, and so on. The focus of the workshop is on text and speech aspects of dialogue with Companions, but topics to be discussed also include the impact of non-dialogue phenomena (e.g., presence, low-level control and recognition, avatar technology, etc.) on dialogue and the interaction of other modalities with dialogue.

Dialogue technology has two main historical sources, both still of relevance today: first, the chatbot tradition going back at least to ELIZA and PARRY and, secondly, the task-driven knowledge-based system back to at least BASEBALL and SHRDLU, all these examples being from the late 1960s. The great chatbots of the past, which bear little relationship to the current rash of Internet products, did have some claim to companionableness of a sort, and e.g. PARRY had explicit emotion parameters of fear and anger that affected its outputs. The chatbots sometimes left initiative with the user (like ELIZA which initiated nothing) and sometimes with the system (like PARRY, who had long paranoid stories to tell if given a chance). The task-based systems, however, aimed at efficient task completion with little attention paid to the social or emotional aspects of interaction. The initiative was always with the user and the system was regarded as a tool or servant with no goal other than to answer or carry out a task as efficiently it could.

The two kind of systems gave rise to quite different forms of evaluation as well: the chatbots led to the sophisticated but artificial "Turing Test" environment of the Loebner competition, while the funded and deployed task-systems — of which the best known were the MIT airline reservation systems like PEGASUS and JUPITER — were evaluated in competitions in terms of time and completion of task rates. However, comparison between systems and their performance proved difficult; no generally applicable and agreed evaluation framework or methodology is available for the companionable systems we are interested in this workshop. A central question then is whether it is possible to measure companionship, and if so, whether is it possible to include some aspects of it in the evaluation of dialogue systems?

Although both the chatbot and task-based traditions began as text-only systems, they were able to take advantage of the rapid advances in speech technology, and fuse speech and language research increasingly. However, none of this led to any obvious advance in what is the goal of this workshop: the exploration of research advances in dialogue systems able to act as Companions. It seems clear that both early traditions have much to contribute to the goal of a Companion, and that it cannot be founded exclusively on either alone. Thus the paper by **Shaikh et al.** takes the analysis of social behaviour in human Internet chat dialogue data as the starting point for building a more sophisticated virtual chat agent.

Many advances have been expected and achieved in pursuing the overall goal of a Companions in recent years, including the increasing sophistication of ASR and language generation and their integration with NLP and with higher-level issues of emotion and dialogue control. However, that there still is room for further improvements in these areas is exemplified in the contribution by **Wallis**.

Other advances vital to the notion of Companionship have come from more sophisticated dialogue management models based on representations of the agents' previous experiences — such as the work presented by **Sieber & Krenn** on episodic memory — and/or personalisation based on the representation of the knowledge about the user, as in the paper by **Adam, Cavedon & Padgham**.

Further advances have been made in a range of deployable theories of emotion that can be connected directly to text and speech, as well as to facial expressions of talking heads as discussed by **Powers et al**. The work by **Konstantopoulos** also discusses the use of emotions, on both the user and the agent side, in the context of furthering the feeling of personalisation, while **Pulman et al.** let the analysis of the emotions of the user guide the dialogue management process of the agent.

Also, many recent improvement in Companion-like system come from the use of new techniques of content extraction in dialogue (such as Information Extraction) and, like every other part of language technology, from the steady advance of machine learning techniques and associated evaluation methods, as shown in several of the presentations in the workshop.

One of the aims of the workshop is to be a forum for focussed discussion of what it is to give a convincing and useful illusion of "personality" in a long-term Companion, when that is advantageous and when not. The paper by **Wilks** discusses some of these concepts using the role of the Victorian lady's Companion as a key metaphor.

The primary aim of the workshop is to explore and discuss promising new methods to design and evaluate dialogue systems able to act as Companions, as well as to report and review recent advances in a wide range of Companion-related topics, concentrating on the what the precise role of language and speech technology is in achieving this. To this end, the first presentation of the workshop is an invited talk by **Traum** on the "Do's and Don'ts for Software Companions".

Welcome to the ACL 2010 Workshop on Companionable Dialogue Systems!

Yorick Wilks
Florida Institute of Human and Machine Cognition,
Pensacola, Florida, US

Björn Gambäck
SICS, Swedish Institute of Computer Science AB, Kista, SE
Norwegian University of Science and Technology, Trondheim, NO

Morena Danieli
Loquendo Voice Technologies —
Telecom Italia, Torino, IT

Organizers:

Yorick Wilks, Florida Institute of Human and Machine Cognition, US
Björn Gambäck, SICS, Swedish Institute of Computer Science AB, SE *and* Norwegian University of Science and Technology, NO
Morena Danieli, Loquendo Voice Technologies — Telecom Italia, Torino, IT

Program Committee:

Jan Alexandersson, DFKI, DE
James Allen, IHMC, US
Elizabeth Andre, University of Augsburg, DE
David Benyon, Napier University, UK
Harry Bunt, University of Tilburg, NL
Morena Danieli, Loquendo, IT
Björn Gambäck, SICS, SE / NTNU, NO
Pavel Ircing, University of West Bohemia, CZ
Kristiina Jokinen, University of Helsinki, FI
Anton Nijholt, University of Twente, NL
Tim Paek, Microsoft, US
Candy Sidner, Worcester Polytechnic Institute, US
Tomek Strzalkowski, Albany University, US
David Traum, USC-ICT, US
Markku Turunen, University of Tampere, FI
Nick Webb, Albany University, US
Yorick Wilks, Florida Institute of Human and Machine Cognition, US
Enrico Zovato, Loquendo, IT
Ingrid Zukerman, Monash University, OZ

Invited Speaker:

David Traum, Institute for Creative Technologies, US

Table of Contents

Conference Program

Thursday, July 15, 2010

09:00–10:30   Invited Paper Session

09:00–09:15   Welcome

09:15–10:30   Invited Paper

Do's and Don'ts for Software Companions, by David Traum

10:30–11:00   Morning Break

Session I (11:00–12:30)

11:00–11:30   *Episodic Memory for Companion Dialogue*
Gregor Sieber and Brigitte Krenn

11:30–12:00   *MANA for the Ageing*
David M W Powers, Martin H Luerssen, Trent W Lewis, Richard E Leibbrandt,
Marissa Milne, John Pashalis and Kenneth Treharne

12:00–12:30   *Is a Companion a Distinctive Kind of Relationship with a Machine?*
Yorick Wilks

12:30–14:00   Lunch Break

Session II (14:00–15:30)

14:00–14:30   *"Hello Emily, How Are You Today?" - Personalised Dialogue in a Toy to Engage*
Children.
Carole Adam, Lawrence Cavedon and Lin Padgham

14:30–15:00   *A Robot in the Kitchen*
Peter Wallis

15:00–15:30   *An Embodied Dialogue System with Personality and Emotions*
Stasinos Konstantopoulos

15:30–16:00   Afternoon Break

Session III (16:00–17:00)

16:00–16:30   *How Was Your Day?*
Stephen Pulman, Johan Boye, Marc Cavazza, Cameron Smith and Raúl Santos de la Cámara

16:30–17:00   *VCA: An Experiment with a Multiparty Virtual Chat Agent*
Samira Shaikh, Tomek Strzalkowski, Sarah Taylor and Nick Webb

17:00–17:30   Wrap up discussion of the day's issues

Workshop ends (17:30)