Information Society Technologies

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AMI @ a glance

This second edition of the AMI newsletter introduces a few novelties. First of all, it marks the starting point of a series of portraits presenting the 15 AMI partners, which throughout the year will highlight their specific areas of expertise and contribution to the consortium. As the project moves forward, AMI's work is also increasingly gaining international projection and recognition. The *Events & Conferences* section therefore showcases past and future AMI-related conferences and workshops.

The AMI Newsletter

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AMI 1st Project Board Meeting

Less than two months after the general kick-off meeting, the AMI Project Board met for the first time in Brussels on March 10, 2004.

The Project Board is a large management body composed of a representative from each of the 15 partners. While ensuring transparency of the Steering Committee's decisions, this board also provides a forum where information is circulated between the Steering Committee and the consortium.

This first meeting offered the partners the opportunity to further discuss some of the key management topics tackled during the January kick-off meeting.

AMI Newsletter

The Project Board has decided that the AMI Newsletter should be an interactive tool. Each Work Package Manager or member of the AMI project is strongly encouraged to regularly submit information to the newsletter editor. The newsletter is published every three months. Depending on the amount of the received material, a decision will be made what to publish in each Newsletter.
We are definitely looking forward to having an AMI Newsletter that reflects our community!

Intranet and Website

As announced in the previous newsletter, the AMI website has been redesigned and thanks to our webmaster is already up and running. Any feedback and input on the new format and content is most welcome in order for the website to reflect the progress and successes of the consortium. Suggestions should be sent by e-mail to Nancy-Lara.robyr@idiap.ch .

Publication

To protect intellectual property rights a list called "Publication" is already available on AMI's intranet: **http://www.amiproject.org -> Private-> Publication.** Any partner wishing to publish a paper or research results must post his/her requests there. AMI members should regularly consult this folder and react to any future publication if they wish.

Meetings

In order to cut down travel costs, a conference call system has been introduced following a public bid offer, held in March. We are happy to announce that Spiderphone US won the contract. Work-Package managers have received complementary information on how to set up these conference call meetings.

From left to right: Steve Renals, Anton Nijholt, Jan Cernocky, Mike Sparks, Pierre Wellner, Phil Green, Wessel Kraaij, Kees Tuinenbreijer, Tilman Becker, Gerhard Rigoll, Philipp Hoschka, Andy Harper, Barbara Peskin, Gael Le Coz, Iain McCowan, Nancy-Lara Robyr, Domenico Perrotta, Hervé Bourlard (taking picture).

AMI News

Netherlands Organisation for Applied Scientific Research (TNO), NL

TNO, located close to Amsterdam, is one of the largest research and technology organisations in Europe. Consisting of fifteen institutes, it employs a staff of some 5,500 employees. TNO has been established by Dutch law as an institute for knowledge transfer, to support companies, government bodies and public organisations with innovative, practicable knowledge. TNO is active in five core areas: **quality of life, defence and public safety, advanced products, processes and systems as well as natural and built environment ICT and services.** Three TNO institutes participate in AMI, site coordinator is Wessel Kraaij (TNO TPD).

TNO Human Factors

The TNO-HF departments of Information Processing, Group Work and Perception participate in AMI, mainly in WP1, 2 and 6. They specialize in knowledge on Human Factors and its application in the design of human work and of adequate technical aids. The department of Information Processing applies knowledge regarding planning and decision making processes, software and system usability as well as man-machine interfaces to design and optimize information and decision support systems (for government, defense and industry), in order to enhance effectiveness, efficiency and safety. The department of GroupWork examines teams and groups from a cognitive and from a social psychological perspective. It concentrates on interactive behavior that may vary from the exchange of information to intensive collaboration involving various psychosocial interactions. The Department of Perception aims at optimising working conditions in terms of task performance, safety, and comfort. To this end, they do innovative research on vision, hearing and speech communication.

Key topics of investigation include a research paradigm to study meeting behavior in a controlled manner. A Smart Meeting Room will be set-up at TNO HF in co-operation with TNO TPD, to be used to carry out comparative experiments within the context of design projects as well as to support experiments with speaker recognition, person tracking and gesture recognition. In the department of Information Processing, work is undertaken on the user requirements for the meeting browser and the remote meeting assistant. The requirements form the basis for designing user interface concepts and evaluating these concepts in meeting settings. This work is carried out in close cooperation with TNO HFs department of Group Work, UT, USFD and TNO Telecom.

TNO TPD (Institute of Applied Physics)

TNO TPD has strong ties with the faculty of applied physics of the technical university of Delft. The institute is specialized in (optical) instruments, sound & vibration, models for the process industry, but also has a strong track record in knowledge management, language technology and information retrieval. Work on real-time object tracking is the main AMI activity at TPD this year. Members of imaging group are developing an architecture for dedicated

real-time tracker development and management. The architecture will be used as a framework for various tracking and localization algorithms, e.g. gesture recognition and person tracking. Real time handling of (possibly) multiple video streams puts high demands on the underlying architecture, the current implementation is based on the DirectShow framework.

Besides the tracking work in WP4, TNO TPD also contributes to WP5 with a study of extractive summarization for meetings. Encouraging results were achieved by maximum-entropy methods using just textual features and a minimum of contextual information. Contrasting experiments with more complex models that incorporate more context are on the way. In addition TNO TPD works on automatic meeting segmentation. Initially a clustering based approach is envisaged, which incorporates lexical chaining and meeting-structure information in the similarity measure.

Finally, TNO TPD's activity on information structuring using a meeting ontology has close connections with the work on meeting scenarios, UI requirement elicitation and DFKI's work on ontology-based summarization.

TNO Telecom

TNO Telecom (formerly the research division of KPN, the Dutch telecommunicatons operator) is a unique centre of innovation in telecommunications and information technology in the Netherlands. It is a centre of extensive technological expertise, but also of socio-cultural and commercial expertise. TNO Telecom employs three hundred researchers and a number of professors, who are associated with various universities.

In the AMI project TNO Telecom contributes to the development of the remote meeting assistant in WP6. Development of mobile services that support people in 'connecting' to business meetings, even if they cannot physically be present, will be a key topic. This relates of course to the other meeting-related topics in the project. Also the ability to give voice based queries to the mobile terminal will be a working item.

Selection of people working on AMI: Dick van Smirren, Franciska de Jong (front), Hans Jongebloed, Erik Boertjes, Jurgen den Hartog, Anita Cremers, Wessel Kraaij, Wilfried Post (back).

Visit TNO's websites!
www.tm.tno.nl, www.tpd.tno.nl

TECH NEWS

Since the last newsletter, which introduced the major tasks and objectives of three technical work-packages, the largest AMI work-package held its kick-off meeting. Below is an overview of WP4's meeting as well as the presentation of its host partner, TUM.

Munich University of Technology (TUM)

The institute for Human-Machine Communication at the Technische Universität München, Germany (TUM) focuses on novel techniques for an intuitive and natural interaction of humans with all types of computers and computer-controlled systems and machines. Its activities represent one of the broadest collections of research in multimodal human-computer interaction and media communication in Germany. The university is considered to be one of the highest ranked German universities, in terms of funding and research achievements.

The institute has been involved in various EU, German, and industrial projects, for example VerbMobil, M4, SAFEE, or TUMMIC (in cooperation with BMW). Its main competences and research interests are mainly stochastic modeling approaches, including Graphical and Hidden Markov Models, Monte-Carlo simulation, and hybrid systems among others. These methods are applied to speech processing, handwriting recognition, gesture, face, and emotion recognition, object tracking and information retrieval. Furthermore it works on projects in usability engineering, user interfaces and modeling, as well as acoustics.

In AMI TUM's team is mainly involved in WP4, where we concentrate on emotion, gesture, and action recognition, tracking, person identification, and multimodal fusion.

The institute consists of three professors, 17 scientists, six staff members, and a large number of student assistants contributing with their diploma theses to its research activities. Currently, five people are involved in the AMI project: Gerhard Rigoll (head of the institute), Marc Al-Hames (WP4 manager, Graphical Models for multimodal fusion), Ronald Müller (emotion recognition), Sascha Schreiber (action and gesture recognition, multiple person tracking), and Stephan Reiter (multimodal fusion). All of TUM's AMI-scientists have a background in electrical engineering and information technology.

From left to right: Sascha Schreiber, Marc Al-Hames, Gerhard Rigoll, Stephan Reiter, Ronald Müller

Visit TUM's website! www.mmk.ei.tum.de

WP4 (Audio-video Processing)

5-6 April 2004, TUM

On April 5th and 6th, the WP4 held its kick-off meeting in Munich, Germany. 30 representatives of all ten partners involved in WP4 met to discuss aims, tasks, evaluations, and data requirements concerning the audio-visual processing part in the AMI project.

WP4 is the largest work package in the AMI project and is mainly concerned with the automatic recognition from audio, video and combined audio-video streams. Regarding this broad and very general spectrum of tasks, seven major challenges arose. For the higher semantic analysis of any meeting (handled in WP5) a "baseline speech recognition system" has to provide a speech transcription. To allow an automatic analysis of a meeting scenario we need to extract "emotions", "focus of attention", as well as "gestures and actions" from the audio-visual stream for each participant. Therefore it is necessary to "identify, cluster and segment persons" and "localize and track" them in the meeting room. Furthermore an "event spotting" is important for enhanced understanding of the meeting.

For each of these seven sub-tasks data requirements, annotation schemes, and evaluation guidelines have been discussed. This allows a standardized comparison between different approaches and algorithms dealing with the same problem. Therefore an easy fusion of each of the partners' contribution into the target meeting browser is made possible.

The participants of the WP4 kick-off meeting in Munich

For more details, full minutes of the meeting are available on the AMI WPs intranet.

NIST Meeting Transcription Workshop
Montreal, 17 May 2004

This was a very busy single day workshop, with 22 talks covering the NIST RT'04 meeting recognition evaluation, data collection and transcription of audio meeting data, speech processing issues arising from meetings and related meetings research. AMI partners IDIAP, ICSI and Edinburgh all presented at the workshop: Guillaume Lathoud presented his work on unsupervised localization of moving people using microphone arrays, Steve Renals presented an overview of AMI, and ICSI had presentations by Andreas Stolcke (also of SRI) on their meeting transcription system (partly supported with AMI, but also joint with SRI and University of Washington) and Adam Janin on the ICSI meetings corpus.

The ICSI team's speech transcription system was the best performing on meeting data recorded using close-talking microphones for each speaker (33% word error rate) and had a competitive system when the signal from tabletop microphones was used (with a word error rate about 30% higher, relative to the close-talking case). In addition to the performance of the systems on the difficult meeting transcription task, many interesting issues were raised including the scoring of transcription of overlapping speech, the use of multiple distant microphones not configured as an array, and the identification of events ranging from laughter to 'hot-spots'.

Other issues discussed include ongoing meeting data collection efforts at several labs and related transcription and annotation issues, the use of microphone arrays and the automatic identification of attention and gaze. One the most positive outcomes of the workshop was the development of a community oriented towards speech processing issues in meetings, and it is likely that the evaluation programme and workshop will be repeated next year.

AMI at the ACM Computer Human Interaction (CHI) Conference - April 24-29, 2004

At the yearly ACM CHI conference, this year organized in Vienna, a workshop on Ambient Intelligence was organized by the AMI partners of the University of Twente and Philips CDS. During the workshop, *Lost in Ambient Intelligence?*, position papers were presented and discussed on the issue of real-time support in smart environments. Apart from Twente and Philips there were also papers by the AMI partners TNO (Human Factors) and IDIAP.

Discussions during the workshop concentrated not only on technical matters, but also on philosophical and psychological issues. Knowing that the environment observes us, how does that influence our behavior? Among others, presence and privacy issues were discussed.

The position papers that were presented are available at the workshop site: **http://parlevink.cs.utwente.nl/chi04**.

AMI researchers Rieks op den Akker (University of Twente) and Kees Tuinenbreijer (Philips).

UPCOMING EVENTS

SOCIAL INTELLIGENCE DESIGN WORKSHOP
University of Twente, July 5-7, 2004

From July 5 to July 7, an international workshop on Social Intelligence Design will be organized by AMI partner University of Twente. The workshop themes are:

1) *Interactions* - covering theory, modelling and analytical frameworks that have been developed with Social Intelligence Design in mind.

2) *Communities* - covering community media, communication patterns in online communities, knowledge-creating, network and anonymous communities.

3) *Collaboration technologies and tools* - covering innovations to support interactions within communities, covering a range from knowledge sharing systems, multi-agent systems, interactive systems, and embodied conversational agents.

Both meetings in smart environments and collaborative work are topics that will be discussed during this workshop, among other in presentations by AMI partners University of Twente, TNO Human Factors and Philips CDS.

For more information on the workshop, please visit:
http://parlevink.cs.utwente.nl/sid04

W3C WORKSHOP ON MULTIMODAL INTERACTION
Sophia Antopolis, France - July 19-20, 2004

As part of the MWeb European project, AMI partner W3C will organize a "Workshop on Multimodal Interaction" on July 19 -20 at INRIA Sophia Antipolis. Topics considered for this worshop include:

- Running software in multimodal systems
- Use of mobile interaction in different industry sectors
- Multimodal authoring approaches
- Interaction management
- Interpreting input involving multiple modalities
- Dynamic adaptation to device/user/environment
- Tactile modalities and haptics
- Supplemental modalities (gaze, facial expressions,...)
- Distributed architectures for multimodal applications
- Usability studies of multimodal applications

The W3C started a multimodal interaction activity (www.w3.org/2002/mmi) two years ago. As this activity is about to be rechartered, attendees from user and research communities will discuss current plans, and provide feedback and suggestions for future multimodal work.

More information on workshop is available at:
www.w3.org/2004/02/mmi-workshop-cfp.html