Chill out, your computer knows what's best for you

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Computers are starting to become more human-centric, anticipating your needs and smoothly acting to meet them. Much of the progress can be attributed to work done by European researchers.

The researchers are from companies and organisations around Europe who are harvesting the work done by CHIL, an ambitious EU-funded project that officially ended in August 2007, but which has spawned numerous spin-offs.

The technologies the researchers developed leave humans free to concentrate on their real work instead of having to think about the computer and how to operate it. The project set out to put human needs first in the development of new communications technologies. In other words, the researchers examined ways in which computers can serve

humans better, rather than humans being subservient to the way computers are currently designed.

Focusing on humans

Rather than focusing on human-and-machine interaction, they set out to create a new paradigm of machine-supported human-to-human interaction. The researchers' goal was to improve user satisfaction and worker productivity.

The researchers looked at communications and the use of technology in meeting rooms, lecture halls and classrooms and set out to make the technology responsive to human needs in such settings.

The CHIL team developed systems that could understand the context of meetings and proactively help the participants by controlling the meeting environment. For example, during a meeting such a system can filter and respond to incoming mobile phone calls to each participant, secretly remind participants of facts such as other participants' names, and provide a virtual shared workspace for all.

Many of the spin-offs from the project involve participants in CHIL, and the technologies the researchers developed.

Project scientific coordinator Dr Rainer Stiefelhagen says the project made some "remarkable" achievements. He points to the project's advances in building a new system of audio-visual components to monitor and analyse what people do and how they behave in different circumstances.

"We also organised a series of evaluation workshops which attracted people from all over the world, and we were invited to make a lot of presentations about project outcomes," Stiefelhagen says. "This gave us a high profile in academic and research circles and resulted in lots of

citations."

Achievements fill a book
In fact so high are the interest levels in the achievements of project CHIL, Springer publishing companies intends to publish later this year a book titled 'Computers in the Human Interactive Loop'.

A comprehensive catalogue of the project's technological achievements has also been published to attract interest from companies and research houses in pursuing and commercialising the different technologies.

All of these efforts have resulted in a surge of activity following on from the project with some serious money being invested.

The Fraunhofer Institute, one of Europe's most prestigious research organisations, has selected smartroom technology developed by CHIL. This technology is able to determine what people in a room are doing and saying and react accordingly. A new five-year research project, 'Visual Perception for the Human-Machine Interaction', aims at bringing an end product to the market.

The project, which started two months after CHIL ended, aims to develop a user-friendly system in a crisis management scenario.

Researchers will build on the project's work of observing what people in a room are doing and saying in different situations, by studying how they act in a crisis-management situation.

Smart crisis management
Specifically they will observe how police or fire officials in a crisis management room handle incoming data in an emergency situation, and work out ways in which they can be helped to communicate both amongst themselves and with the outside world.

Stiefelhagen, who is also involved with this project, explains: "We want to build a smart environment supporting this kind of work, with big interactive displays and relevant services and a lot of perception components. Then we will take the best of them and develop them even further for practical applications, after working with the emergency services to see how this can best be done to meet their requirements."

Another CHIL application is being developed by a new startup company, Videmo Intelligent Video Analysis. Videmo plans to provide the service to retailers and surveillance firms.

The company is developing software for intelligent video analysis with a focus on customer monitoring in retail situations. The system can automatically analyse customer behaviour to, for instance, show which displays are attracting attention and which are not.

On the security side the system can provide video-based monitoring and analysis of point-of-sale systems, including automatic fraud detection.

"There are a lot of CCTVs continually monitoring, but 95% of the time the data is simply recorded and stored away," says Stiefelhagen. "What this company aims to do is build more intelligent video analysis programs which can perform tasks such as automatically identifying wanted people or recognising suspicious walking and movement patterns."

House anticipates occupants' needs
At an earlier stage of development is a proposed link-up between one of the CHIL project partners and an Italian building company to develop a smart house, moving from the single-room environment which served as testbed for the project's researchers.

Here the analogy between computer and butler is much closer, with the

house computer anticipating the inhabitant's needs.

Many potential applications for CHIL technologies have also been identified and suggested in the catalogue. One of these is to use SmarTrack, a real-time system that provides accurate information about the spatial location of people in sports analysis.

During TV coverage of a sporting event, real-time tracking of each player would allow for online analysis of the important phases of the game to support the commentators.

Face recognition is another area that may be ripe for development, replacing or augmenting PIN codes and other forms of biometric security access, such as fingerprints. The potential applications include access control to buildings, offices, computers and the internet, as well as for the authentication for electronic transactions.

A comprehensive breakdown of just what may come from the project will be available in the upcoming book.
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