

The Interpreter in the Laptop

KIT at the CeBIT 2010 – Other Exhibits Deal with Soundless Language and a Semantic Media Wiki



At the KIT booth: Recording of electric potentials allows for soundless communication. (Photo: Deutsche Messe Hannover)

From March 2 to 6, the CeBIT, Hanover, will open its doors again. Karlsruhe Institute of Technology (KIT) will present latest research results. At booth A02/1, hall 9, the “future park” will present among others a software for language-to-language translation of lectures and parliamentary debates, a method for soundless calling, and an encryption technique for mobile communication devices. The Research Center for Information Technology (Forschungszentrum Informatik FZI), the innovation partner of KIT, will also present three exhibits at the KIT booth.

Language-to-Language Translation

Here, automatic language recognition, automatic translation, and language synthesis are combined. The interpretation system developed by the KIT Institute for Anthropomatics serves as an automatic interpreter of lectures and parliamentary debates. It recognizes and translates language in real time with small latency. The translation result can either be read in the form of a continuously output text or

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listened to in the form of a spoken text by directed loudspeakers or mobile smart phones. A novel ultrasonic loudspeaker system directs a beam to selected listeners, the neighbor does not hear anything. In this way, the interpretation can be heard by various listeners in different languages. The system runs on a laptop only and, hence, is mobile.

Soundless Communication

The Institute for Anthropomatics also has developed a technology that enables people to speak soundlessly and still to be understood by the conversation partner. This technology is based on the principle of electromyography, that is the acquisition and recording of electrical potentials generated by muscle activity. This muscle activity is measured in the face. Four applications of this technology will be exhibited. An example is soundless calling. The user can speak into the phone soundlessly, but is still understood by the conversation partner on the other end of the line. As a result, it is possible to communicate in silent environments, at the cinema or theater, without disturbing others. Another field of use is the transmission of confidential information. For the transmission of passwords and PINs, for example, users can change seamlessly to soundless language and, hence, transmit confidential information in a tap-proof manner.

Radio Key Exchange

Using this method developed by the KIT Institute for Cryptography and Security, mobile users can generate a joint secret that can be used for encoding communication. This new technology derives a "joint key" for communication partners from the disturbances and interferences of the radio transmission channel. The disturbances are generated by reflections at obstacles, such as buildings or vehicles, and remain the same when the roles of transmitter and receiver are changed, as a result of which both communication partners actually are given the same key. An "attacker" at another place receives completely different reflections and echoes and is not able to determine the key. The method offers long-term security as it is impossible to calculate the key retroactively. Feasible future applications may be mobile end devices, such as smart phones or laptops.

Sematic Media Wiki

A team of scientists at the KIT Institute for Applied Information Technology and Formal Description Methods (AIFB) has developed an extension of the Media Wiki software. Evaluation of the contents of Wikis by machines shall be improved in this way. Semantic Media

Wiki is successfully applied on several hundreds of web pages and has been translated into more than 50 languages so far. With this tool, the users can typify cross references within a Wiki. These are then available as structured and networked data and enable computers to automatically output reasonable answers to complex queries.

STOCCER Soccer Stock Exchange

The FSM Group, a spin-off of the KIT Institute for Information Systems and Management (IISM) will present the STOCCER Soccer Stock Exchange for the 2010 Soccer Championships at the KIT booth. With STOCCER, visitors will experience the functioning of prognosis markets and in particular their rapid response to new information. In addition, the FSM Group will present a self-service solution for prognosis markets on demand at the 2010 CeBIT. With this solution, it will be possible for the first time to integrate prognosis markets as software as a service (SaaS) in medium-sized and large enterprises.

The **Research Center for Information Technology (FZK)** will present exhibits relating to multi-core processing (use of multi-core processors for increasing the performance of computers), cloud computing (web technology to supply and procure IT resources from the network), and plastic simulation (new technology for true-to-scale 3D simulation of process models) at the KIT booth. It will be shown, how these technologies are applied in software development in practice.

Karlsruhe Institute of Technology (KIT) is a public corporation and state institution of Baden-Württemberg. It fulfills the mission of a university and the mission of a national research center of the Helmholtz Association. KIT focuses on a knowledge triangle that links the tasks of research, teaching, and innovation.

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