A tidy disk, a tidy mind

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Digital images organize themselves. © Fraunhofer FIT

How to master the chaos in an endless sea of photographs? In the present age of digital photography, the sheer number of images creates a great need in the archiving of pictures. At this year's CeBIT trade fair, scientists from the Fraunhofer Institute for Applied Information Technology FIT and the Fraunhofer Institute for Telecommunications HHI will be presenting new intelligent technologies designed to organize today's digital flood of photographs.

You can clearly see it in your mind's eye: the photo you took three years ago in Malaga, when the whole family was gathered together on the beach at sunset. Now, where on earth could that photo be? Since the invention of the digital camera, photography has evolved into an

increasingly popular pastime. Thousands of pictures are produced in next to no time and proceed to fill up endless gigabytes on our hard drives. Anyone who hopes to still find their snapshots in a few years time must painstakingly keep them in order, 'labeling' their digital photos just as they would label paper ones. This is something that both professionals and trigger-happy amateur photographers have to struggle with on a daily basis.

In future, a new system called aceMedia could relieve us of this tedious task. At the CeBIT trade fair, researchers from the Fraunhofer Institute for Applied Information Technology FIT will present a prototype developed in the EU-funded aceMedia project that independently and intelligently organizes photos when they are saved on the hard disk. aceMedia analyzes new photos using various visual and content-based characteristics. Hardly anything escapes the system during this analysis: aceMedia can recognize, for instance, whether a picture was taken indoors or outdoors, and whether it depicts a landscape or a man-made environment. This means that it can distinguish between, say, a beach panorama and a city skyline. It can even memorize people's faces. If aceMedia later recognizes a face, it allocates that person's name to the corresponding picture. Following the analysis, the system automatically 'labels' each photograph according to its characteristics. Experts also refer to these digital labels as metadata. These enable a picture to be easily found at any time. Yet another function of aceMedia is that it can automatically organize photos and videos into separate collections of different topics or time periods according to the user's preferences.

All this digital organization means that the user will easily be able to find that family photo taken on the beach at Malaga, as well as any pictures of the children, or all those with sunsets. These can be found either by entering the desired keyword or by selecting an equivalent picture, from at which aceMedia selects and displays all similar photos.

"Right from the beginning, aceMedia was developed with the user's needs in mind. The successful combination of new methods guarantees that the system will be flexible, easy to manage, and an absolute pleasure to use," says project manager Barbara Schmidt-Belz. aceMedia will help not only professional photographers and photo agencies but also amateur shutterbugs to archive their digital photo collections.

A mobile solution to the search for the proverbial needle in the photo stack comes in the form of the Pocket-PC Photobrowser, a program designed for archiving large volumes of photographs on mobile hand-held devices. The system was developed by researchers at the Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut, HHI, and is very easy to handle. If the user selects a photo featuring a ship, for example, all other photos with ships in them are displayed within just a few seconds. Similarly to aceMedia, the Pocket-PC Photobrowser analyzes the individual pictures with regard to different characteristics and saves the corresponding metadata.

The chief attraction of the Pocket-PC Photobrowser is that, despite huge volumes of data, even a hand-held device is able to sift through thousands of pictures in a matter of seconds and find the right one – a task which can normally only be handled by a powerful computer.

"The Pocket-PC Photobrowser creates a thumbnail, or miniature picture, of each photograph, and analyzes its metadata. However, a thumbnail only takes up a fraction of the space required by the original file. In this way, the software can scan a very large number of pictures for the desired characteristics in a short space of time," project manager Thomas Meiers explains. Until now, mobile terminals have only been able to display pictures, while a search function for hand-held devices does not yet exist.

The Fraunhofer researchers expect the Pocket-PC Photobrowser to be

ready for market launch in about six months' time. The software can be installed on any hand-held device featuring a mobile Windows operating system such as Windows Mobile 2005.

Source: Fraunhofer-Gesellschaft