Useful items in selected articles.

Real-Time Object Recognition using Mobile Devices

This paper proposes an application for real-time object recognition using mobile devices that runs locally without the need to communicate with a server. Both object detection and identification algorithms are performed by the mobile device avoiding the communication with the server. The paper presents results that show the effectiveness of the proposal.

Extending Authoring Tools for Location-Aware Applications with an Infrastructure Visualization Layer

We propose a new approach in which designers work with three layers of information: information about the physical world, information about digital media, but also visualizations of ubiquitous infrastructure. We describe the implementation of a prototype authoring tool that embodies this approach and describe how it has been used to author a location-based game for mobile phones called Tycoon. We then outline the key challenges involved in generalizing this approach to more powerful authoring tools including acquiring and visualizing infrastructure data, acquiring map data, and flexibly specifying how digital content relates to both of these.

AR Record&Replay: Situated Compositing of Video Content in Mobile Augmented Reality

Our real-time technique works on mobile phones, and uses a panorama-based tracker to create visually seamless and spatially registered overlay of video content. We apply a temporal foreground-background segmentation of video footage and show how the segmented information can be precisely registered in real-time in the camera view of a mobile phone.

Geo-indexed object recognition for mobile vision tasks

The presented work settles attention in the architecture of ambient intelligence, in particular, for the application of mobile vision tasks in multimodal interfaces. A major issue for the performance of these services is uncertainty in the visual information which roots in the requirement to index into a huge amount of reference im- ages. The presented functional component – the *Attentive Machine Interface* (AMI) – enables contextual processing of multi-sensor in- formation in a probabilistic framework, for example to exploit con- textual information from geo-services with the purpose to cut down the visual search space into a subset of relevant object hypotheses. We demonstrate results about geo-indexed object recognition from experimental tracks and image captures in an urban scenario, ex- tracting object hypotheses in the local context from both (i) mobile image based appearance and (ii) GPS based positioning, and

ver- ify performance in recognition accuracy (> 14%) using Bayesian decision fusion, verifying the advantage of multi-sensor attentive processing in multimodal interfaces.

PhoneGuide: Museum Guidance Supported by On-Device Object Recognition on Mobile Phones

Our main technical achievement is a simple and light-weight object recognition approach that is realized with single-layer perceptron neuronal networks. In contrast to related systems which perform computationally intensive image processing tasks on remote servers, our intention is to carry out all computations directly on the phone. This ensures little or even no network traffic and consequently decreases cost for online times. Our laboratory experiments and field surveys have shown that photographed museum exhibits can be recognized with a probability of over 90%.