3D graphics, reality fuse on the fly

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(PhysOrg.com) -- Software developed at Oxford University is making it possible to fuse real and 3D computer-generated visuals on the fly.

The Parallel Tracking and Mapping [PTAM] software is a camera-tracking system which maps the environment around you as seen through a camera and turns real world surfaces into platforms for virtual objects or characters without the need for pre-stored maps or tags.

The video above, showing PTAM working on iPhone, gives you an idea of how the software might be used.

It's just been announced that the system has been licensed to augmented reality company QderoPateo LLC by Oxford's technology transfer company Isis Innovation. QderoPateo will integrate the software into mobile phone applications, to provide novel advertising and other services.

'The blending of real and virtual worlds is common enough in films and television, but is usually achieved by extensive processing of the recorded images or by filming in studios with known objects at fixed locations,' David Murray of Oxford University's Department of Engineering Science, who led the work, told me.

'The PTAM software allows developers to augment a camera's video stream in real time and in everyday locations. It allows developers to build augmented reality applications for consumer markets and education, both quickly and economically.'

The software builds a detailed 3D map containing thousands of features which can be tracked at a standard frame-rate with an accuracy rivalling that of model-based systems.

It can also recognise objects and scenes through the appearance of clusters of features that form a 'digital signature' of the location. As the map is built, the camera viewpoint and angle is calculated in such a way that 3D graphics can be projected into the video stream so that they appear to belong in the same scene.

On a smart phone PTAM can help improve the accuracy of sensors such as GPS and digital compasses and fill in when satellite, 3G and WiFi signals drop out. One potential application is a PTAM-enabled app featuring an avatar 'guide' who could appear in your camera view and lead you down the street towards a restaurant while explaining the menu and making your reservation.

QderoPateo have ambitious plans to grow the mobile augmented reality market and create an augmented reality search and gaming engine running for their 'Ouidoo' smart phone - expected to make its debut at the Shanghai 2010 World Expo this spring,

Isis Innovation is also looking for commercial partners who will develop the software for a variety of other useful applications.

More information: www.robots.ox.ac.uk/~gk/PTAM/

Provided by Oxford University