

Mobile 3D Scanner Solution

Computer Vision & Geometry Group, ETH Zurich



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Almost everyone has a camera on their smartphone nowadays. Scientists from ETH Zurich have developed an app that allows anyone to capture the world in 3D with their mobile device.

Prof. Marc Pollefeys and researchers of his Computer Vision and Geometry Group study how to extract 3D measurements from camera recordings. They transformed an ordinary consumer smartphone into a portable digital scanner.

"I think our technology and further developments along these lines will lead in the near future to everyone being able to capture realistic visual 3D representations of objects and scenes as easily as photographs are taken today," says Prof. Pollefeys. Instead of taking a conventional picture, the user simply moves their phone around the object of interest and after a few motions a 3D model appears on the screen.

The calculations needed to reconstruct hundreds of thousands of points are performed directly on the phone. Therefore, the user gets immediate feedback and can select additional viewpoints to cover missing parts of the 3D model - an important advantage compared to solutions that 'batch-process' all the images in the cloud at a later time. The scientists were able to shrink processes down on smartphone level and make them highly efficient.

The technology is becoming more and more pervasive not only in daily life, but also in the fields of cultural heritage and commerce. It can be used, for instance, by archaeologists creating virtual copies of artefacts immediately on the excavation site. The new digital technique also opens the door to full-scale crime scene reconstructions in courtrooms and offers the possibility to send a 3D image of a rash or swelling to a doctor for diagnosis.

3D scanning and printing are eliciting growing interest from business and industry. Some pundits consider the technology the spark that will launch the next industrial revolution.

ETH's researchers are about to set up a spin-off named aquilaviz.

ETH Zurich
Department of Computer Science
Computer Vision & Geometry Group
Universitätstrasse 6, CNB G 105
8092 Zurich
Switzerland

Team:

Prof. Marc Pollefeys
Dr. Amaël Delaunoy
Petri Tanskanen

info@aquilaviz.com

www.aquilaviz.com
www.cvg.ethz.ch

- Runs on smartphones and tablets
- No additional hardware needed
- Interactive, live feedback
- No cloud, no internet required
- Works anywhere, anytime