System for 3-D Position and Gesture Sensing of Human Hand

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Technology description

Researchers at Princeton University have developed a new touchless 3D gesture and control system for electronic devices including tablets, PCs and smart phones. The system consists of a new hardware device with interfacing software. This novel system has advantages over the current technologies in both accuracy and sensitivity. Princeton is now seeking a commercialization partner to license the technology.

Currently there are three technologies used for 3D bare-hand proximity sensing in industry: camera-based detection, capacitive sensing and infrared sensing. Camera based detection has advantages for long distance detection, but has low performance at close range. It is also difficult for the camera to capture the entire display area. This new sensing technology is able to detect the 3D position of hands at distances from 0cm to 40cm with the same performance at very short distances. It is also able to cover the entire display area. Capacitive sensing has limited distance compared to this new technology. The infrared sensing method is difficult to fabricate into an array for 3D sensing. This new technology is compatible with capacitive touch screen fabrication for sensor array manufacture.

It is anticipated that this method could optimize the current position and gesture sensing control system on electronic devices such as tablets, PCs, and smart phones.

James Sturmis William and Edna Macaleer Professor of Engineering and Applied Science, Professor of Electrical Engineering, and Director of Princeton Institute for the Science and Technology of Materials (PRISM). Professor Sturm’ s research group is interested in Biological/Biomedical Engineering, Large Area/Flex Electronics for Display/Sensing/Energy Applications, Nanoscale Materials/Devices for Sensing and Energy Applications, and Quantum Information/Quantum Computing. Notable among the numerous honors and awards Professor Sturm has received are Election to New Jersey High Tech Hall of Fame (2008), Election to Board of Directors for 2007-2009 by Materials Research Society (2006), and IEEE Fellow (2001).

Application area

· 3D Position and Gesture Sensing on electronic devices, including tablets, PCs and smart phones.

Advantages

· Integrated hardware device with interfacing software
· Improved accuracy and sensitivity
· Compatible with current capacitive touch screen.

Institution

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