TOUCH & GO

Thanks in part to the Wii's sudden superstar status, the concept of gesture technology in mobile phones is getting a big thumbs-up.

BY LYNN WALFORD

The head-over-heels success of Nintendo's gesture-operated Wii, with sales of 1.2 million game controllers, could point to a whole new way of making mobile phones more intuitive.

Accelerometers – electromagnetic devices that measure acceleration – and infrared beams allow the Wii to sense players' gestures to operate games. It may not be long until these same accelerometers, along with cameras, gyroscopes and capacitive sensors, could reposition mobile phone interaction to become a more gesture-centric experience.

"We like the Wii, because anything that promotes gesture interfaces is good for gesture recognition," says Francis MacDougall, co-founder of GestureTek, a leader in interactive gesture-based technology and the creator of the EyeMobile Engine that enables phone cameras to detect motion. The EyeMobile Engine, which is available for all BREW 2.1.3 phones that support ICamera, will be included in mobile phones in Japan this spring.

Gestures will operate elements such as menus, games and map navigation. For example, a subscriber who wanted to view the Tokyo subway map could move the phone left or right to scroll the map in those directions. Tilting the phone forward would zoom in closer to the desired location. These features greatly reduce the number of clicks usually required for map viewing. Games will include marble rolling functions, navigating a motorcycle around tricky curves as if you are holding the handlebars and dart/tomato throwing at photos of friends.

In 3D Tilt-A-World, the ball's momentum is controlled through camera-based motion detection as players tilt their phones.

Mark Pierce, CEO of Super Happy Fun Fun, an Austin, Texas-based mobile game and application developer, created 3D Tilt-A-World, the first game using GestureTek's EyeMobile Engine. Pierce says it's the fastest-selling game for 2007. The game is available through Verizon Wireless for V CAST phones and for all Amp'd Mobile devices. Super Happy Fun Fun is currently adapting the game to run on phones with built-in accelerometers, and is completing development of a 2D version for lower-end BREW 2.1.3 devices, available to carriers this month.

ACCELERATING ACCELEROMETERS

Accelerometers are not exactly new to mobile phones. In other parts of the world, mobile phones have incorporated them for various uses, including calculations and music making. Samsung's SCH-S310 in Korea allows users to make calls by writing telephone numbers, shake the phone twice to disconnect a call and make sharp movement to the right or left to tell the built-in MP3 player to skip forward or go back a track. The "motion beat box" operates a drum, clap, scratch or tambourine, allowing users to play along with the music. Pantech's PH-S6500, which launched in Korea, uses the 3D accelerometer for playing games and as a pedometer, capable of measuring the user's strides and estimating calories burned. Vodafone's Sharp V603SH in Japan features a golf game where the player holds the phone as it it's a golf club and swings it to hit the ball. The feature also is used in shooter-style games.

In Apple's recently announced iPhone, due out in June, the accelerometer will detect when you rotate the phone from portrait to landscape, then will automatically change the display contents, so you immediately see the entire width of a Web page or a photo in its proper landscape aspect ratio.

Accelerometers work by measuring linear motion but are not as precise for some applications as gyroscopes which measure how quickly an object rotates, says Dan Goehl, director of sales at InvenSense, a Micro-Electro-Mechanical Systems (MEMS) gyroscope developer in Santa Clara, Calif.

"There are many companies evaluating and integrating our sensors for their applications, but none that we can publicly comment about," Goehl says. "Our inertial sensors are especially helpful for dead-reckoning for GPS, image stabilization, user interface control and gaming, which enable carriers to increase ARPU."

The Onyx concept platform's adaptive ClearPad user interface is enabled through Synaptics' capacitive sensing technology.

EXTENDING GESTURES

Besides accelerometers, capacitive sensors also are finding a role in the mobile phone market. These sensors perceive touching gestures via changes in electrical charge.

"Capacitive sensors simplify the design of mobile phones and make mobile phones more intuitive within the context of use," says John Feland, human interface architect for interface developer Synaptics. "Depending on the application, the phone will work and look like a phone for phone functions, MP3 player functions will be like other music players and photo applications will have the look and feel of cameras." The company is best known for its TouchPad technology, which is found in more than 50% of notebook computers. It also partnered with German design firm Pilotfish to create the working Onyx concept phone in August 2006.

The Onyx uses Synaptics' ClearPad technology that places clear capacitive sensors over the screen. Sensors can detect when a user draws a number on the screen – or when the device is placed up to an ear, which triggers the answer-the-phone function. Performing phone

Bull's Eye

Phones that can use EyeMobile Engine and play 3D Tilt-A-World

- All BREW 2.1.3 phones that support Camera
- Audiovox 8940, 8945
- Kyocera KX18
- LG VX8000, 8100, 8300, 8600
- Motorola E815, E816, K1M KRAZR, V3c RAZR, V3m RAZR
- Nokia 6315
- Samsung A930
- All Amp'd Mobile phones (Jet, Angel, Hollywood & VM3)

actions that normally require several button ushes can be as simple as drawing or dragging. or example, on the Onyx screen, drawing a art may initiate a call to a loved one while ragging the John Smith icon over to the Mary ones icon will connect a conference call.

The ClearPad also allows for different 2-nger modes for functions that may require ultiple key presses. For example, a 2-finger esture could allow a user to zoom. Two fingers also may be used to activate a virtual scroll wheel. Called "ChiralMotion," a user can move through a list on the screen by vertically stroking with two fingers down the screen; the user continues the scrolling function by moving fingers in a wheel (like stirring coffee) at the bottom of the screen.

Capacitive sensors cover the keypad in Synaptics' MobileTouch HexPad in Pantech's PG-2800 phone, enabling "finger writing" across the surface of the mechanical keypad for the phones available in Russia. Synaptics also announced the launch of a 3-button MobileTouch solution for Samsung phones in Korea that enables quick control of popular multimedia-on-demand functions.

The iPhone's patented multi-touch capabilities use capacitive touchscreen technology, according to Geoff Walker, a consultant specializing in touch and displays in Milpitas, Calif. "The concept of multi-touch is not new to touchscreens," says Walker. "What is innovative about the iPhone is the way touch is integrated into the product in an exceptionally intuitive way with an expanded touch vocabulary. Single-touch, double-touch, pinching together or opening of fingers, variable-speed stroke scrolling ... the iPhone goes beyond anything I have seen in touch-controlled functionality, especially in a mobile device."

Ramon Llamas, research analyst for IDC, says, "It's not definite what impact gesture technology will have on the mobile market and how big it will be. There will be customers who will use it for different reasons, just to dial a phone, just for entertainment and just to be different."

Pierce: Predicts big things for gesture tech phones.

"I would not be surprised to see a dozen or so phones with gesture technology from major U.S. carriers next year," notes Super Happy Fun Fun's Pierce.

"We're just at the start of the gesture revolution in mobile phones," adds GestureTek's MacDougall. "There will be many exciting applications for all market segments. It's only a matter of time before everyone will give gesture technology a thumbs-up." ■

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