SoMo Audience Swipe Technology

Overview

Swipe Technology is a set of behaviors applied to advertisements on a mobile device that interprets the set of movements that a user’s finger makes on the device screen to determine whether or not it qualifies as a swipe gesture in the proper areas of the current screen. In the event that a user’s movements constitute a swipe gesture, a signal is sent out to the advertisement and any other interested listeners allowing the gesture to be mapped to one or more actions to be taken.

Usage Examples

**Swipe to Close**

One common use of Swipe Technology is to provide a means for closing an advertisement that is displayed to the user, replacing the simple click that is often used. In this scenario, Swipe Technology will interpret finger movements whenever the user touches the area of the screen in which the ad is displayed. If the user’s movements constitute a swipe gesture, the interactive elements of the advertisement are signaled that the user wishes to close the ad and can react appropriately to tailor the user experience and remove the ad.

**Swipe to Click Through**

Another common use of Swipe Technology is to provide a replacement for the standard click used to indicate that the user has expressed interest in an advertisement. In this scenario, Swipe Technology will interpret finger movements whenever the user touches the area of the screen in which the ad is displayed. If the user’s movements constitute a swipe gesture, the web browser is signaled that the user has expressed interest and it should navigate to advertisement’s click-through website.

**Swipe for User Interaction**

Another potential use of Swipe Technology is to provide an interactive experience for an advertisement in which the user is able to trigger different responses from the advertisement by performing a swipe gesture on different parts. Consider a holiday advertisement which displays Santa’s Workshop, replete with elves working, a stack of completed jack-in-the-box toys in the corner, and Santa himself sitting in a rocking chair holding a soft drink. Swipe Technology would be used to listen for swipe gestures on the different elements of the ad. For example, if the user performs a swipe on Santa he may respond to the signal by taking a sip of his drink. The elves may respond to a swipe by banging with their hammers, while a swipe on the jack-in-the-box may trigger one to play music and pop up its inhabitant. Each of these scenarios would be presented as a distinct signal to the advertisement, allowing the ad to script a simple set of behaviors while the act of interpreting the user’s intent is left to Swipe Technology.

Gesture Interpretation Details

Swipe Technology performs its gesture interpretation by listening to the native touch events that are signaled by the mobile device’s web browser. By collecting the touch data provided and considering it against a set of criteria and configuration options, Swipe Technology is able to approximate the user’s intent and determine if a set of finger movements should be interpreted as a swipe gesture.

Swipe Technology is loaded into the web browser as a client-side script fetched from an external web host. Upon being loaded, the Swipe Technology behaviors are presented a set of configuration options and requests that the web browser notify it when a user touches the screen. When a touch is detected, the swipe algorithm will determine if the initial touch qualifies for further interpretation or should be no longer considered. If the touch was made with more than a single figure and the swipe options do not allow multi-finger gestures, then the touch data is discarded. If the swipe options specified an element of the web page where a swipe must start and the touch was not made on that element, then the touch data is discarded.

Assuming that further interpretation is required, the swipe algorithm will request that the browser notify it when the user’s fingers are moved on the screen and when the user stops touching the screen. Additionally, a timer is created which will periodically test to see if the user’s finger has moved since the interval last passed. If not, then it is assumed that the user is resting a finger on the device and is not intending to perform a swipe; the touch data is discarded and the swipe algorithm requests that the web browser no longer pass along touch movement and ending data.

If the user’s finger is actively moving, the swipe technology will begin collecting and interpreting data for each movement event that the browser passes along. At each movement, a test is performed to ensure that the touch occurred only on the web page element that is registered for swipe actions, if strict detection was requested as an option. If not, then the browser is requested to cease sending movement and ending events and the touch data is discarded. A test is also performed to ensure that the direction of movement was consistent with the prior touch, granting early detection if the user is making a gesture more complicated than a swipe or simply moving their finger sporadically on the screen. In either case, it is assumed that the user is not intending to perform a swipe; the touch data is discarded and the swipe algorithm requests that it be notified of no further movement or ending data.

Assuming that the swipe algorithm has elected to receive the ending data, once the user’s finger leaves the device then the swipe algorithm requests that the browser stop sending movement and ending data and the timer is stopped. All of the data collected during the movement events is then examined to determine if a swipe gesture was made. If the swipe options specified an element of the web page where a swipe must end and the final touch was not made on that element, then the touch data is discarded. If the captured movements were not performed within the time limitations, if too many of the touches occurred outside of the requested swipe target element, or if a minimum distance was not covered then the touch data is discarded. If the touch data doesn’t describe a path that can be interpreted as a straight line within the configured margin of error or the direction of the gesture was not allowed by the swipe options, the data is discarded.

If the touch data describes a path that was reasonably interpreted as a straight line in a legal direction which covered the required distance within the required time interval, it is considered a swipe. The swipe algorithm will then signal any interested listeners about the gesture including details about the direction and requested swipe target element over which the gesture was detected.

Appendix A: Swipe Detection Options

* **Swipe Target Element –** The element of the page for which swipe detection should be performed. If not specified, the entire screen is used.
* **Swipe Starting Element –** The element of the page that the swipe gesture must be started on. If not specified, no constraint is applied.
* **Swipe Ending Element –** The element of the page that the swipe gesture must be completed on. If not specified, no constraint is applied.
* **Minimum Distance –** The minimum distance (in pixels) that the user’s fingers must have traveled during the touch events for the gesture to qualify. If not specified, 50 pixels is assumed.
* **Maximum Time Interval –** The maximum amount of time (in milliseconds) that may elapse between touch events for the gesture to qualify. If not specified, 250 milliseconds is assumed.
* **Maximum Touches Outside of Target –** The maximum number of touches that may occur outside of the target element for the gesture to qualify. If not specified, no constraint is applied.
* **Allowable Directions –** One or more directions from the set of Up, Down, Left, and Right in which the movements may be made for the gesture to qualify. If not specified, the full set of directions is allowed.
* **Line Detection Factor –** The strictness of line detection from the set of Strict, Loose, and Even used to determine if the touch data was constant enough to constitute a line. If not specified, “Even“ is assumed. If desired, a custom percentage value for allowable deviation may be provided here instead.
* **Allow Multiple Fingers –** Determines if gestures made with more than a single finger qualify. If not specified, it is assumed that only single-finger gestures are legal.