and/or low level processing, is made aware of the user input to the touch screen. Such awareness may be in the form, for example, of coordinates of points that are touched on the touch screen. When a combination of such points, touched on the touch screen, are determined to correspond to a user putting her fingers on the touch screen in a "typing" position, then a virtual keyboard initiation event is triggered. The processing to determine that the combination of points correspond to a user putting her fingers on the touch screen in a "typing" position, such that a virtual input device initiation event is to be triggered, may be allocated to the operating system processing **104** or may be, for example, processing that occurs in conjunction or cooperation with operating system processing **104**.

[**0050**] We now discuss more details with respect to the virtual input device deactivate event. As illustrated in **FIG. 1**, triggering of a virtual input device deactivate event causes the virtual input to cease to be displayed as part of a composite display on the touch screen. The virtual input device deactivate event may, for example, be triggered as a result of an action specifically taken by the user with respect to the virtual input device directly. This may include, for example, activating a specific "deactivate" key on the virtual input device display to cause the virtual input device to cease to be displayed as part of the composite display. An interaction with the application more generally, but not necessarily specifically by activating a key on the virtual input device, may cause a deactivation event to be triggered.

[**0051**] One example of such an interaction includes an interaction with the display of the executing application in a way such that providing input via a virtual input device is not appropriate. Another example includes interacting with the application (via the application display or via the virtual keyboard display, as appropriate) to close the application. Yet another example includes a gesture (such as "wiping" a hand across the keyboard) or activating the virtual return key in combination with "sliding" the fingers off the virtual return key, which causes the "return" to be activated and then causes the virtual keyboard to be dismissed.

[**0052**] As yet another example, triggering a deactivation event may be less related to particular interaction with the virtual input device specifically, or the touch screen generally but may be, for example, caused by a passage of a particular amount of time since a key on the virtual input device was activated. That is, disuse of the virtual input device for the particular amount of time would imply that the virtual keyboard is no longer to be used. In yet another example, a deactivation event may be triggered by the application itself, such as the application triggering a deactivation event when the state of the application is such that display of the virtual input device is deemed to be not required and/or appropriate.

[**0053**] We now discuss various modes of operation of a virtual input device. In one example, input (typically, but not limited to, text) associated with activated keys may be provided directly to, and operated upon by, the application with which the application display corresponds. An indication of the input may even be displayed directly in an input field associated with the application.

[**0054**] In other examples, an example of which is illustrated in **FIG. 6**, an indication of the input may appear in a portion **604** of the display associated with the virtual input device **602**, but not directly associated with the application display. Input may then be transferred to the application (directly, to be acted upon by the application, or to an input field **608** associated with the application display) either automatically or on command of the user. In accordance with one example, automatic transfer occurs upon input via the virtual input device **602** of "n" characters, where "n" may be a user-configurable setting. In accordance with another example, automatic transfer occurs every "m" seconds or other units of time, where "m" may be a user-configurable setting.

[**0055**] In some examples, the virtual input device display **602** includes a visual indicator **606** associated with the virtual input device **602** and the input field **608** of the application display. Referring to the example display **600** in **FIG. 6**, the virtual input device display **602** includes the visual indicator arrow **606**, which points from the virtual input device display **602** to a corresponding input field **606** of the application display. The visual indicator **606** is not limited to being a pointer. As another example, the visual indicator **606** may be the input field **608** of the application field being highlighted.

[**0056**] In some examples, the display associated with the virtual input device displayed in a window that is smaller than the virtual input device itself (and, the size of the window may be user-configurable). In this case, the user may activate portions of the virtual input device display to scroll to (and, thus, access) different portions of the virtual input device display. **FIGS. 7A, 7B** and **7**C illustrate a virtual input device display in various states of having been scrolled. The scrolling may even be in more than two dimension (e.g., a virtual cube, or a virtual shape in more than three dimensions), to access non-displayed portions of the virtual input device.

[**0057**] The many features and advantages of the present invention are apparent from the written description and, thus, it is intended by the appended claims to cover all such features and advantages of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, the invention should not be limited to the exact construction and operation as illustrated and described. Hence, all suitable modifications and equivalents may be resorted to as falling within the scope of the invention.

What is claimed is:

1. A computer-implemented method of generating a display on a touch screen of a computer, the display including an application display, associated with an application executing on the computer, and a virtual input device display for a user to provide input to the application executing on the computer via the touch screen, the method comprising:

in response to a virtual input device initiation event, determining initial characteristics of the virtual input device display;

based on characteristics of the application display and the characteristics of the virtual input device display, determining initial characteristics of a composite display image including the application display and the virtual input device display; and

causing the composite display to be displayed on the touch screen.