

advantage of Buchana's system follows from the use of two similar sensing systems. Full mouse emulation, as an example, requires the tracking of the stylus position while hovering above the display. Such a feature cannot be supported by a pressure sensitive system, which is on the other hand essential for finger touch detection.

[0011] There is thus a widely recognized need for, and it would be highly advantageous to have, a digitizer devoid of the above limitations.

#### SUMMARY OF THE INVENTION

[0012] According to one aspect of the present invention there is provided apparatus for user input to a digital system, comprising a first sensing system having first sensors for sensing a user interaction using a sensing method of a first type, and a second sensing system having second sensors for sensing a user interaction using a sensing method of a second type, said first and second sensors being co-located on a sensing surface.

[0013] Preferably, said first and said second sensing systems respectively are operable to sense simultaneously.

[0014] Preferably, said sensing surface is superimposed on a display screen.

[0015] Preferably, said sensing surface is superimposed on a part of said display screen.

[0016] Preferably, a first of said sensing systems is superimposed on a part of said display screen, and a second of said sensing systems is superimposed substantially over an entirety of said display screen.

[0017] Preferably, each one of said sensing systems is superimposed on a respectively independently defined part of said display screen.

[0018] Preferably, said first sensing system is a touch pressure-sensing system.

[0019] Preferably, said second sensing system is an electromagnetic based sensing system.

[0020] Preferably, said display screen is a flat panel screen.

[0021] Preferably, at least one of said sensing systems comprises sensor reading operability for reading multiple simultaneous interactions with respective sensors.

[0022] Preferably, said display screen is an LCD screen

[0023] The apparatus preferably comprises a connectivity interface for allowing fitting as an accessory to a computing system.

[0024] Preferably, said display screen is an electronic pad-type surface.

[0025] Preferably, said co-located sensing systems are constructed as a foil-based sensing arrangement.

[0026] Preferably, said foil-based sensing arrangement comprises at least one transparent foil.

[0027] Preferably, at least some of said sensors comprise organic conductive material.

[0028] Preferably, said transparent foil is a patterned transparent foil.

[0029] Preferably, said pattern is etched onto said foil, thereby to form said sensors.

[0030] Preferably, said pattern is printed on said foil, thereby to form said sensors.

[0031] Preferably, said pattern is introduced by passivation.

[0032] Preferably, said foil-based sensing arrangement comprises at least two superimposed transparent foils.

[0033] Preferably, sensors of said first sensing system are embedded in each of said at least two superimposed transparent foils.

[0034] Preferably, sensors of said second sensing system are embedded in each of said at least two superimposed transparent foils.

[0035] Preferably, sensors of said second sensing system are embedded in each of said at least two superimposed transparent foils.

[0036] Preferably, sensors of said first and said second sensing systems respectively are interleaved in said foil-based sensing arrangement.

[0037] Preferably, sensors of said first and said second sensing systems are interleaved in said first of said at least two superimposed transparent foils.

[0038] Preferably, said first and said second sensing systems have respectively different report rates for scanning respective sensors.

[0039] Preferably, said respectively different report rates are selected for compatibility with a respective one of said first and second user interaction type.

[0040] Preferably, said first and said second sensing systems have respectively different sensing resolution levels.

[0041] Preferably, said respectively different sensing resolution levels are selected for compatibility with a respective one of said first and second user interaction type.

[0042] Preferably, said first sensing system is an electromagnetic based sensing system, said respective user interaction is stylus operation and said respective resolution level is selected for compatibility with a respective application.

[0043] Preferably, said second sensing system is a pressure based sensing system, said respective user interaction is touch and said respective resolution level is selected for fingertip size.

[0044] Preferably, said foil-based sensing arrangement comprises two superimposed transparent foils, and wherein a first parallel arrangement of pressure-sensitive sensors is located on a first of said foils and a second parallel arrangement of pressure-sensitive sensors, orthogonal to said first parallel arrangement, is correspondingly located on a second of said foils.

[0045] Preferably, said superimposed foils are spaced apart by a flexible spacer to be pressed together upon application of pressure.

[0046] Preferably, said flexible spacer comprises a matrix of substantially nonconducting material with gaps, wherein said gaps are located to correspond to junctions between said first and second parallel arrangements of pressure-sensitive