

prior proximity images current positions of the one or more surface contacts comprises determining a velocity of the one or more surface contacts along one or more corresponding existing paths.

**11.** The method of claim 10 further comprising:

starting new paths for unpaired surface contacts.

**12.** The method of claim 11 further comprising:

deactivating unpaired predicted paths.

**13.** The method of claim 10 further comprising:

deactivating unpaired predicted paths.

**14.** The method of claim 10 further comprising:

updating path parameters for each of the one or more predicted paths from one or more measured parameters of the surface contact paired with each predicted path.

**15.** The method of claim 14 further comprising:

starting new paths for unpaired surface contacts.

**16.** The method of claim 15 further comprising:

deactivating unpaired predicted paths.

**17.** The method of claim 14 further comprising:

deactivating unpaired predicted paths.

**18.** A method for associating into paths one or more groups of pixels from successive proximity images, each group of pixels corresponding to a distinguishable hand part or other touch object on or near the surface of a multi-touch apparatus and each proximity image representing a scan of a plurality of proximity sensors of the multi-touch apparatus,

the successive proximity images including a current proximity image and one or more prior proximity images, the method comprising:

predicting paths for each of the one or more groups of pixels from the one or more prior proximity images;

pairing each group of pixels with its predicted path;

whereby the paths may be used to generate user interface interactions in response to motion of the distinguishable hand parts or other touch objects through the successive proximity images.

**20.** The method of claim 18 further comprising:

starting new paths for unpaired groups of pixels.

**21.** The method of claim 20 further comprising:

deactivating unpaired predicted paths.

**22.** The method of claim 18 further comprising:

deactivating unpaired predicted paths.

**23.** The method of claim 18 wherein at least one of the groups of pixels corresponds to a hand part near but not on the multi-touch surface.

**24.** The method of claim 23 further comprising:

starting new paths for unpaired groups of pixels, wherein at least one unpaired group of pixels corresponds to a hand part near but not on the multi-touch surface.

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