

Title: Wearable device with pattern recognition

FIELD

The present technique relates generally to a wearable device structure with enhanced motion detection by motion sensor (or) micro electric currents from the fingers' movement (or) micro electric currents from the fingers' movement, more particularly, a miniature wearable device coupled with a motion sensor (or) micro electric currents from the fingers' movement (or) micro electric currents from the fingers' movement to generate a pattern of movement of the finger, hand, arm and gesture of the user thereof.

BACKGROUND

Presently various conventional wearable devices are available with capabilities to detect heartbeat, body movement such as accelerometers, pedometer etc. However, none of such conventional wearable devices are not well-suited for accurately detecting and measuring movement having a small or large movement. Additionally, these kind of accelerometers typically have a threshold sensitivity due to limited sensing capability as a result they are not accurate when the movement includes a small movement and large movement.

Further, conventional wearable devices are not suitable for coupling motion sensor (or) micro electric currents from the fingers' movement (or) micro electric currents from the fingers' movements to particular parts of the body to detect and measure small movements of the parts of body of a user. Thus, there is a need of a wearable device with enhanced detection by motion sensor (or) micro electric

currents from the fingers' movement (or) micro electric currents from the fingers' movement without the limitations of conventional techniques.

Summary

The present wearable device and process relates to generating motion index using motion sensor (or) micro electric currents from the fingers' movement (or) micro electric currents from the fingers' movement of the wearable device. The miniature wearable device is coupled with one or more motion sensor (or) micro electric currents from the fingers' movement (or) micro electric currents from the fingers' movement to detect movements of the finger or fingers. The movement of the finger, fingers or combination of finger gestures using the motion sensor (or) micro electric currents from the fingers' movement (or) micro electric currents from the fingers' movement, assists in detecting user's gesture. Further, the movement of the finger, fingers using the motion sensor (or) micro electric currents from the fingers' movement, assists in generating a sequence of the finger, hand and arm movement. The motion sensor (or) micro electric currents from the fingers' movements are configured to detect movement of the finger, hand, arm and gesture of the user thereof. The generated sequence creates a pattern of the action performed by the user. Using the pattern, a motion index is computed. The computed motion index for the user is used as a digital signature or any other authentication of the user and approval of various transactions performed by the user.

Specification

The present technique is disclosed in the description and the accompanying drawings:

Drawing

Fig 1 is a diagram displaying exemplary wearable devices coupled with motion detection sensor, and

Fig 2 is a diagram depicting exemplary process of user pattern identification using motion detection sensor.

Fig 3 is a diagram depicting exemplary process of user pattern identification using motion detection sensor for dictation purposes.

Description

Fig 1 is a diagram displaying exemplary wearable devices coupled with motion detection sensor. The exemplary wearable device 110 comprises a micro-processor 120, a motion sensor (or) micro electric currents from the fingers' movement 130, a transmitter 140 and a storage device 150. The wearable device 110 may a miniature wearable device to be worn in a finger or fingers like a ring. The wearable device 110 may comprise a pin slot to connect external device and storage through micro-USB and the like. On wearing in the ring, it detects the movement of the finger, fingers, hand and the arm. Further, it also detects the gesture of the user. The micro-processor 120 may assist in processing and calculating various data generated by the wearable device. The wearable devices further may include one or more motion sensor (or) micro electric currents from the fingers' movements 130. The motion sensor (or) micro electric currents from the fingers' movement 130 may be configured to detect any movement of the finger, combination of finger gestures, hand or arm. Further, the motion sensor (or) micro electric currents from the fingers' movement may be configured to detect the gesture of the user. Various data generated by the motion sensor (or) micro electric currents from the fingers' movement 130 may be

processed by the micro-processor 120. The wearable device further comprises a storage capabilities such as a memory to store various data generated by the motion sensor (or) micro electric currents from the fingers' movement and processed by the micro-processor 120.

The wearable device further comprises a transmitter 140. The transmitter 140 may be enabled to transfer various data generated by the motion sensor (or) micro electric currents from the fingers' movement 130 of the wearable devices with other computing devices such as a smart phone, laptop, tablet and the like. The transmission of data may be accomplished wirelessly or through wire using one or more of known technologies such as Bluetooth, WIFI, Infrared (IR) and the like. On transmitting the data to other devices, such as smartphone, using the transmitter, various analysis may be performed. In one example, the smartphone may be comprise a touch sensitive screen that enables the user to interact with the smartphone by touching the screen.

On touching the screen while using the wearable device as a ring in a finger, the motion sensor (or) micro electric currents from the fingers' movement detects each small and large movement. In other words, it detects the gesture of the user. The user, while wearing the wearable device, may use the finger or combination of finger gestures as a mouse at the screen of the smartphone. By detecting all gesture and movement of the user, a pattern is formed. The pattern is used to compute motion index for the user. The motion index may be used as a digital signature or any other authentication wherein the digital signature or any other authentication may be configured to authenticate the user and control the device or approve certain transaction at the smartphone. The digital key like a authentication token is also used as to unlock personal equipment like notebook,), home door lock and automobile. The digital key can be also used to make e-Payment through the ring.

Fig 2 is a diagram depicting exemplary process of user pattern identification using motion detection sensor. On wearing the miniature wearable device 110 in a finger, fingers it starts detecting movement of the finger, hand, and arm as represented by 210. The detection may be performed using one or more motion sensor (or) micro electric currents from the fingers' movements. The motion sensor (or) micro electric currents from the fingers' movement may be embedded in the wearable device and configured to detect detecting movement of the finger, fingers hand, and arm and gesture thereof. The movement of finger, combination of finger gestures or other body part generates a sequence of the actions as displayed by 220. On identifying one or more sequence, a pattern of the action is generated for the user. The pattern may assist in creating motion index as disclosed at 240. The motion index 240, which is created for each user, is stored at a server remotely or at the storage 150. The identified motion index 240 may be employed to authenticate a user for a device such as smartphone wherein the gesture of the user is identified using the motion index and configured with the smartphone to receive instructions on detecting the gesture. On authentication of the user, various transaction may be enabled to performed by the user.

Fig.3 is a diagram depicting exemplary process of dictation. On wearing the miniature wearable device 110 in finger, fingers it starts detecting movement of the finger, hand, and arm as represented by 310. The detection may be performed using one or more motion sensor (or) micro electric currents from the fingers' movements. The motion sensor (or) micro electric currents from the fingers' movement may be embedded in the wearable device and configured to detect detecting movement of the finger, fingers hand, and arm and gesture thereof. The movement of finger, combination of finger gestures or other body part generates a sequence of the actions as displayed by 320. On identifying one or more sequence, a pattern of the action is generated for the user. The pattern may assist in creating motion index as disclosed at 330. The motion index 330, which is created for each user, is stored at a server remotely or at the storage 150. The identified motion index 330 may be employed to authenticate a

user for a device such as smartphone wherein the gesture of the user is identified using the motion index and configured with the smartphone to receive instructions on detecting the gesture such as dictation. On authentication of the user, various transaction such as writing in the air translates to dictation into the memory may be enabled and performed by the user.

The digital key like a authentication token is also used as to unlock personal equipment like notebook, home door lock and automobile.

The digital key is also used to make e-Payment through the ring.

The digital key like a authentication token is also used as a personal ID for the purpose of interacting with social networks and internet for the purpose such as ecommerce and internet transactions.

Claim:

1. A wearable device, comprising:

a motion sensor (or) micro electric currents from the fingers' movement configured to sense a motion signal from a motion of a user of the wearable device; and

a processor configured to calculate a motion of the wearable device based on the motion signal of the user.

2. The wearable device of claim 1, further comprising the processor is configured to estimate position of the wearable device based on the motion signal.

3. The wearable device of claim 2, wherein the processor is configured to estimate the motion signal based on the user gesture

4. The wearable device of claim 1, wherein the motion sensor (or) micro electric currents from the fingers' movement is associated with a processor, wearable computing device further comprises at least one module executable by the processor associated with the motion sensor (or) micro electric currents from the fingers' movement to capture user gesture

5. The wearable device of claim1, further comprising motion sensor (or) micro electric currents from the fingers' movement configured to detect large and small hand and arm movements.

6. The wearable device of claim1 wherein the user gesture is tracked as pattern.

7. The wearable device of claim 1, wherein the motion sensor (or) micro electric currents from the fingers' movement associated with a processor, further comprises at least one module executable by the processor associated with the motion sensor (or) micro electric currents from the fingers' movement to capture motion index from pattern.

8. The wearable device of claim 1, wherein the motion index is used for authentication of the user.
9. The wearable device of claim1, wherein the device is used for energy harvesting by heat generated from the body
10. The wearable device of claim1, wherein the device is used for energy harvesting by kinetics of the finger movement.
11. The wearable device of claim 1, can be of either of stickable fabric, pane wrapped around the finger, wrist like a plaster.