CLAIMS

WHAT IS CLAIMED IS:

1. A method of power management, the method comprising:

activating a low-power state of an input device;

determining a new activation distance for waking up the input device from the low-power state when an approaching object, being a part of the operator's human body used to operate the input device, is at the ;new activation distance;

wherein determining the new activation distance comprises:

determining a plurality of actual activation times, wherein each actual activation time is a respective time taken from detecting a respective presence of the approaching object at a previous activation distance to a respective time when the approaching object reaches the input device,

calculating an average value of the plurality of actual activation times,

calculating an average speed of operator movement within the previous activation distance based on the average value of the plurality of actual activation times and the previous activation distance, and

calculating the new activation distance based on the average speed of operator movement within the previous activation distance and a desired activation time, wherein the desired activation time is a duration for the input device to wake up from the low-power state to a full operational state;

detecting, at the input device, by using a sensor of the input device, a presence of the approaching object at the new activation distance; and

waking up the input device from the low-power state in response to the detecting of the presence of the approaching object at the new activation distance.

2. The method of claim 1, further comprising:

activating the full operational state of the input device;

determining a deactivation distance for entering the input device into the low-power state from the full operational state when a departing object is at the deactivation distance;

detecting, at the input device, by using the sensor of the input device, a presence of the departing object at the deactivation distance; and

entering the input device into the low-power state in response to the detecting of the presence of the departing object at the deactivation distance.

3. The method of claim 2, wherein the determining of the deactivation distance comprises:

determining an actual deactivation time for the input device based on the operator behavior; and

calculating the deactivation distance based on the actual deactivation time and a desired deactivation time.

4. The method of claim 3, wherein the actual deactivation time is a time taken from a time when a previous departing object leaves the input device to detecting of a presence of the previous departing object at a previous deactivation distance.

5. The method of claim 4, wherein the calculating of the deactivation distance comprises:

calculating a speed of operator movement based on the actual deactivation time and the previous deactivation distance; and

calculating the deactivation distance based on the speed of operator movement and the desired deactivation time.

6. An apparatus for power management, the apparatus comprising:

a sensor;

a memory; and

at least one processor coupled to the memory and configured to:

activate a low-power state of the apparatus;

determine a new activation distance for waking the apparatus from the low-power state when an approaching object, being a part of the operator's human body used to operate the apparatus, is at the new activation distance;

wherein determining the new activation distance comprises:

determining a plurality of actual activation times, wherein each actual activation time is a respective time taken from detecting a respective presence of the approaching object at a previous activation distance to a respective time when the approaching object reaches the apparatus,

calculating an average value of the plurality of actual activation times,

calculating an average speed of operator movement within the previous activation distance based on the average value of the plurality of actual activation times and the previous activation distance, and

calculating the new activation distance based on the average speed of operator movement within the previous activation distance and a desired activation time, wherein the desired activation time is a duration for the apparatus to wake up from the low-power state to a full operational state;

detect, by using the sensor, a presence of the approaching object at the new activation distance; and

wake up the apparatus from the low-power state in response to the detecting of the presence of the approaching object at the new activation distance.

7. The apparatus of claim 6, wherein the at least one processor is further configured to:

activate the full operational state of the apparatus;

determine a deactivation distance for entering the apparatus into the low-power state from the full operational state when a departing object is at the deactivation distance;

detect, by using the sensor, a presence of the departing object at the deactivation distance; and

enter the apparatus into the low-power state in response to the detecting of the presence of the departing object at the deactivation distance.

8. The apparatus of claim 7, wherein, to determine the deactivation distance, the at least one processor is configured to:

determine an actual deactivation time for the apparatus based on the operator behavior; and

calculate the deactivation distance based on the actual deactivation time and a desired deactivation time.

9. The apparatus of claim 8, wherein the actual deactivation time is a time taken from a time when a previous departing object leaves the apparatus to detecting of a presence of the previous departing object at a previous deactivation distance.

10. The apparatus of claim 9, wherein, to calculate the deactivation distance, the at least one processor is configured to:

calculate a speed of operator movement based on the actual deactivation time and the previous deactivation distance; and

calculate the deactivation distance based on the speed of operator movement and the desired deactivation time.

11. The apparatus of claim 6,

wherein the apparatus is a keyboard or a joystick controller.

12. The apparatus of claim 6,

wherein the apparatus is a mouse.

13. The apparatus of claim 6,

wherein the memory is configured to store a plurality of data indicating the plurality of actual activation times which are used for computation by the at least one processor.

14. A non-transitory computer-readable medium storing computer executable code, comprising instructions for:

activating a low-power state of an input device;

determining a new activation distance for waking up the input device from the low-power state when an approaching object, being a part of the operator's human body used to operate the input device, is at the new activation distance;

wherein determining the new activation distance comprises:

determining a plurality of actual activation times, wherein each actual activation time is a respective time taken from detecting a respective presence of the approaching object at a previous activation distance to a respective time when the approaching object reaches the input device,

calculating an average value of the plurality of actual activation times,

calculating an average speed of operator movement within the previous activation distance based on the average value of the plurality of actual activation times and the previous activation distance, and

calculating the new activation distance based on the average speed of operator movement within the previous activation distance and a desired activation time, wherein the desired activation time is a duration for the input device to wake up from the low-power state to a full operational state;

detecting, at the input device, by using a sensor of the input device, a presence of the approaching object at the new activation distance; and

waking up the input device from the low-power state in response to the detecting of the presence of the approaching object at the new activation distance.

15. The non-transitory computer-readable medium of claim 14, further comprising instructions for:

activating the full operational state of the input device;

determining a deactivation distance for entering the input device into the low-power state from the full operational state when a departing object is at the deactivation distance;

detecting, at the input device, by using the sensor of the input device, a presence of the departing object at the deactivation distance; and

entering the input device into the low-power state in response to the detecting of the presence of the departing object at the deactivation distance.

16. The non-transitory computer-readable medium of claim 15, wherein the determining of the deactivation distance comprises:

determining an actual deactivation time, wherein the actual deactivation time is a time taken from a time when a previous departing object leaves the input device to detecting of a presence of the previous departing object at a previous deactivation distance;

calculating a speed of operator movement based on the actual deactivation time and the previous deactivation distance; and

calculating the deactivation distance based on the speed of operator movement and the desired deactivation time.