

22. A game controller, comprising:

a housing;

at least one input device disposed in the housing for receiving input from a user;

a first actuator disposed in the housing, the first actuator having a fixed member coupled to the housing and a moveable member operatively engaged with the fixed member and moveable relative thereto; and

a second actuator disposed in the housing, the second actuator having a fixed member coupled to the housing and a moveable member operatively engaged with the fixed member and moveable relative thereto;

wherein the first and second actuators are operable to synchronously vibrate such that a haptic sensation is provided to the user.

23. The game controller of claim 22, wherein the second actuator is oriented such that a vibration force of the second actuator is not parallel to a vibration force of the first actuator.

24. The game controller of claim 22, wherein the second actuator is positioned over the first actuator to minimize torque during synchronized vibration.

25. The game controller of claim 22, wherein first and second actuators generate a torque during synchronized vibration.

26. The game controller of claim 22, wherein at least one of the first and second actuators is a pivoting actuator or a linear actuator operable to generate frequencies below 50 Hertz.

27. The game controller of claim 22, wherein the first and second actuators each comprise a rotary actuator, and an axis of a rotating shaft of the first actuator is aligned with an axis of a rotating shaft of the second actuator.

28. A vibration device, comprising:

a base member;

a first actuator operatively attached to the base member, the first actuator being operable to generate a first vibration force having a first frequency of vibration and a first magnitude of vibration associated therewith, the first actuator being further operable to impart the first vibration force to the base member;

a second actuator operatively attached to the base member, the second actuator being operable to generate a second vibration force having a second frequency of vibration and a second magnitude of vibration associated therewith, the second actuator being further operable to impart the second vibration force to the base member;

means for controlling the first and second actuators so that the first frequency of vibration is substantially identical to the second frequency of vibration;

means for independently modulating the magnitudes of the first and second vibration forces to control a direction of a combined vibration force applied onto the base member, wherein the combined vibration force is a vector sum of the first and second vibration forces; and

means for controlling timing of vibrations of the first and second actuators so that peaks of the magnitudes of the first and second vibration forces occur substantially concurrently.

29. The vibration device of claim 28, wherein each of the actuators comprises a first member operatively coupled to the base member and a second member movable relative to the corresponding first member.

30. The vibration device of claim 28, wherein the first and second actuators are controlled to vibrate in-phase.

31. The vibration device of claim 28, wherein the first frequency of vibration is a primary frequency of the first actuator and the second frequency of vibration is a primary frequency of the second actuator.

32. The vibration device of claim 29, wherein an electromagnetic force is generated between the first and second members in both of the first and second actuators.

33. The vibration device of claim 32, wherein the first member of each actuator includes a permanent magnet and the second member of each actuator includes an electromagnet.

34. The vibration device of claim 29, wherein the first and second actuators each further comprises a spring device that generates force between the first and second members of the respective actuator.

35. The vibration device of claim 34, wherein both the first actuator and the second actuator are operated at substantially a natural frequency of the respective actuator.

36. The vibration device of claim 34, wherein both of the actuators are operated over a range of frequencies of the respective actuator, and wherein the range of frequencies includes a natural frequency of the respective actuator.

37. The vibration device of claim 28, wherein the direction of the combined vibration force corresponds to a direction of an event in a computer simulation.

38. The vibration device of claim 37, wherein a change in the direction of the combined vibration force corresponds to a change in the direction of a simulated motion in the computer simulation.

39. The vibration device of claim 28, wherein the direction of the combined vibration force applied onto the base member is controlled to vary over time.

40. A vibration device, comprising:

a base member;

a first actuator operatively attached to the base member and having a member moveable relative to the base, the first actuator being operable to apply a first force onto the base member;

a second actuator operatively attached to the base member and having a member moveable relative to the base, the second actuator being operable to apply a second force onto the base member; and

means for controlling timing of the first and second actuators such that the moveable member of each of the first and second actuators repeatedly reverses direction of motion relative to the base member at substantially the same time.

41. The vibration device of claim 40, further comprising means for independently modulating magnitudes of the first and second forces to control a direction of a combined force applied onto the base member, wherein the combined force is a vector sum of the first and second forces.

42. The vibration device of claim 40, further comprising means for independently modulating the magnitudes of the first and second forces to control a magnitude of a combined