CLAIMS

1. A self-powered triboelectric based device comprising

a base member comprising a first material,

an actuator member comprising a second material having a work function that differs from the first material disposed on a first surface of the base member, and

a plurality of electrodes electrically coupled to the base member;

wherein the plurality of electrodes are disposed in a manner such that a direction of a shear force component applied to the actuator member can be analysed based on electrical outputs measured via respective ones of the electrodes;

wherein the actuator member is sphere-shaped and the second material is comprised in contact points on a surface of the sphere-shaped actuator member; and

wherein the base member is integrally formed with the electrodes such that the electrodes comprise the first material.

2. The self-powered triboelectric based device of claim 1, wherein the actuator member is elastically deformable such that a normal force component applied to the actuator member can be analysed based on the electrical outputs measured via the respective ones of the electrodes.

3. The self-powered triboelectric based device of claims 1 or 2, wherein the self-powered triboelectric based device is configured for 2-dimensional or 3-dimensional sensing of control signals for providing a user control interface.

4. The self-powered triboelectric based device of any one of claims 1 to 3, further comprising a supporting structure for supporting the base member, the actuator member and the plurality of electrodes.

5. The self-powered triboelectric based device of any one of claims 1 to 4, comprising four electrodes.

6. The self-powered triboelectric based device of any one of claims 1 to 5, wherein two of the self-powered triboelectric based devices are coupled together to form an integral device.

7. The self-powered triboelectric based device of any one of claims 1 to 6, wherein the electrodes comprise two sets of four electrodes each, each set being disposed circumferentially around four of the contact points at different and wherein the two sets and their respective associated contact points are disposed at different latitudes of the sphere-shaped actuator member.

8. A user interface comprising the device as claimed in any one of claims 1 to 7.

9. A method of providing user input using the device as claimed in any one of claims 1 to 7.