CLAIMS

1. A robotic vehicle chassis, comprising:

a first chassis section;

a second chassis section;

a hinge joint connecting the first and second chassis sections such that the first and second chassis sections are capable of rotation with respect to each other in at least a first direction;

at least one rotation stop positioned to prevent undesired rotation about the hinge joint;

a drive wheel mounted to one of the first and second chassis sections, in which the drive wheel includes a first and second drive hub, each drive hub having contact surfaces that are curved such that each side of the driving wheel contacts the surface at a single point; and

an omni-wheel mounted to the other of the first and second chassis sections, the omni-wheel being mounted at an angle orthogonal with respect to the drive wheel.

2. A robotic vehicle chassis according to Claim 1, further comprising:

at least a first magnet connected to at least the drive wheel or the chassis section to which the drive wheel is mounted; and

at least a second magnet connected to at least the omni-wheel or the chassis section to which the omni-wheel is mounted,

in which the at least first and second magnets maintain an attractive force between the first chassis section and the surface and the second chassis section and the surface, respectively,

in which the hinge joint rotates in response to the curvature of a surface the vehicle is traversing and, limited in rotation to a set range of degrees by the at least one rotation stop.

3. A robotic vehicle chassis according to Claim 1 or 2, in which the at least one rotation stop is included in the hinge joint.

4. A robotic vehicle chassis according to Claim 1 or 2, in which the at least one rotation stop includes mating surfaces on each of the first chassis section and the second chassis section.

5. A robotic vehicle chassis according to Claim 1, 3 or 4, in which the at least one rotation stop limits rotation of the hinge joint to a set range of degrees.

6. A robotic vehicle chassis according to any preceding claim, in which the at least one rotation stop is adjustable to allow the hinge to rotate to adapt to both concave and convex surfaces.

7. A robotic vehicle chassis according to any preceding claim, in which the at least one rotation stop provides resistance to rotation in a direction other than the first direction.

8. A robotic vehicle chassis according to any preceding claim, in which the omni-wheel further comprises a first and second set of rollers located on each side of the omni-wheel such that the first and second set of rollers are located to maintain at least two points of contact with the surface.

9. A robotic vehicle chassis according to Claim 8, in which the first and second set of rollers are supported by a first and second hub, respectively, where the first and second hubs are configured to rotate freely with respect to each other.

10. A robotic vehicle chassis, comprising:

a first chassis section, the first chassis section including at least one motor;

a second chassis section;

a hinge joint connecting the first and second chassis sections such that the first and second chassis sections are capable of rotation with respect to each other in at least a first direction;

a drive wheel mounted to the first chassis section, in which the drive wheel includes a first hub and a second hub, the first and second drive hubs being configured to be actuated to rotate independently by the at least one motor;

an omni-wheel mounted to the second chassis section, the omni-wheel being mounted at an angle orthogonal with respect to the drive wheel and configured to be passively driven by the drive wheel;

at least a first magnet connected to at least the drive wheel or the first chassis section; and

at least a second magnet connected to at least the omni-wheel or the second chassis section,

in which the at least first and second magnets maintain an attractive force between the first chassis section and the surface and the second chassis section and the surface, respectively.

11. A robotic vehicle chassis according to Claim 10, further comprising:

a spring element extending between the first and second chassis section, the spring element providing a force that urges the first and second chassis sections into a normal position in which there is a zero degree of rotation between the first and second chassis sections.

12. A robotic vehicle chassis according to Claim 10, in which the omni-wheel includes a first and second set of rollers located on each side of the omni-wheel such that the first and second set of rollers are located to maintain at least two points of contact with the surface.

13. A robotic vehicle chassis according to Claim 12, in which the first and second set of rollers are supported by a first and second hub, respectively, where the first and second hubs are configured to rotate freely with respect to each other.

14. A robotic vehicle chassis according to Claim 10, in which the contact surfaces of the drive hubs are curved such that each side of the driving wheel contacts the surface at a single point.

15. A robotic vehicle chassis according to Claim 14, in which points of contact of the drive hubs are textured.

16. A robotic vehicle chassis according to Claim 10, in which a single power source provides power to the first and second chassis sections and the at least one motor for driving the drive wheel.

17. A robotic vehicle chassis according to Claim 10, in which a first motor actuates the first hub and a second motor actuates the second hub.