

### **Quadruped Robot Driven by Linear Actuators (BGN)**

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**O**ne of the main advantages of articulated walking robots and a feature that is indispensable to their successful implementation is their ability to traverse very rough, uneven, and cluttered terrains. Planetary exploration, hazardous maintenance work on dangerous structures such as nuclear reactors, and transportation in places without paved roads are examples of applications that require reliable and mobile machines with the ability to dynamically adjust their motion patterns in response to changes in the environment. The goal of this invention is to produce an autonomous, four-legged walking machine capable of traversing various classes of rough terrain. Articulation is conferred upon this simplified legged robot by linear actuators, such that each leg comprises three cylinders - one for leg flexion and extension and two for leg rotation.

#### **Goals and Benefits**

Autonomous, four-legged robot capable of traversing rough terrain

Can carry payloads as heavy as its own weight

An on-board IC engine functions as the power source for long distance operation

Simple and reliable

Easy operation based on low-level servo control and high-level gait planning and adjustment

Cost effective construction utilizes off-the-shelf mass production components

#### **Potential Commercial Uses, market and potential strategic partners**

Uses include not only military and search and rescue applications, but also for entertainment purposes and as a toy.

The market for smart autonomous service robots is expected to reach sales of \$16 billion a year by 2025.

#### **Development Stage and Development Status Summary**

A prototype of the robot has been developed.


The robot is capable of performing basic walking maneuvers.

Control software and a user interface have been developed.

#### **Patent Status**

Patent Pending

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