International Journal of Research in Advent Technology, Special Issue, March 2019
E-ISSN: 2321-9637
3rd National Conference on Recent Trends & Innovations In Mechanical Engineering
15th & 16th March 2019
Available online at www.ijrat.org

Review Paper On Steps Climbing Robot

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Abstract: Over the past few years, the scientists have tried to develop robots that can move on rough terrains. However, there are few robots that are suitable for use in rough terrains. A number of new technologies have evolved for reliable localization, obstacle avoidance and even autonomous map building in dynamically changing environment. However,mobility in very rough terrain is often very limited due to the absence of adequate . Which is more convenient utilization of personal aids such as wheel chair and walker. By taking there advantages and also their disadvantages on the design they made. Climbing the steps for the oldage people and at the construction areas to carry the bricks for maximum heights. To overcome these difficulties, a step-climbing mechanism and its device are developed allowing the robot to climb the stairs. By using this commercial robot we can achieve the climbing task. These are made by using IOT, Artificial intelligence etc.

1. INTRODUCTION:

Stairways are omnipresent in man-made environments. These were designed to easily bridge large vertical distances for humans. However, stairs represent a serious challenge to vehicles and robots during the time of disaster such as fire, earthquakes. There is a strong demand for mobile robots that can climb the stairs, for example, to aid people who have difficulty in walking, in urban search and rescue or urban reconnaissance. However, there are few robots that are suitable for use in rough terrains. Most of the existing surface locomotion concepts are based on wheels, caterpillars or legs and have not much evolved lately

Each classification of mobile robot possesses their unique advantages and suffers from certain disadvantages. For the legged robots, they have the capability to adapt to many kinds of unstructured environment and in doing so they can stabilize themselves as different legs can orient themselves with independent configuration. Nonetheless, these robots are instinctively complex and are comparatively slow. The wheeled robot can relate for the slow locomotive speeds of legged robots as they can move faster because of their rolling motion. However in unstructured conditions, their mobility is often very inadequate and highly depends on the type of surroundings and the typical size of encounter obstacle

The tracked mobile robots have high off-road capability yet ordinarily have overwhelming weight. However, the tracked mobile robots have low energy efficiency in turning motions. On the other hand, the legged mobile robots have great adaptability in rough terrain but usually involves a complex locomotive mechanisms which needs complicated control algorithms

2. CLASSIFICATION OF ROBOTS

Stair climbing has been carried out with robots using different types of locomotion. One can roughly distinguish wheeled, legged, and tracked robots.

- *Wheeled Robots*
- *Legged Robots*
- *Tracked Robots*

Wheeled Robots

Wheeled robots typically have to resort to mechanic extension to conquer stairs. One application of such a technique is in-patient treatment, where stair climbing could greatly improve mobility, and thus eminence of life, of people confined to wheelchairs. Lawn and Ishimatsu present a stairclimbing wheelchair using two (forward and rear) articulated wheel clusters attached to movable appendages. The robot is equipped with step-contact sensors, but relies on user steering and is thus only *semi-autonomous.* In the Fig 1.1, 1.2

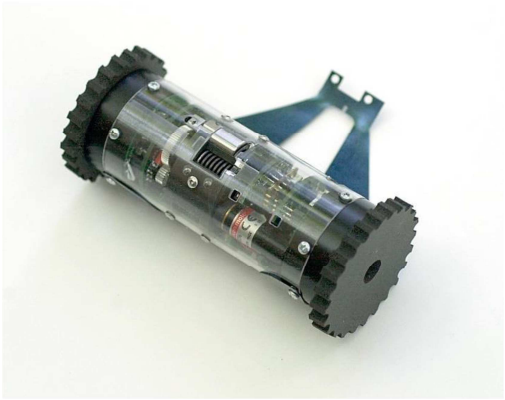

Fig 1.1

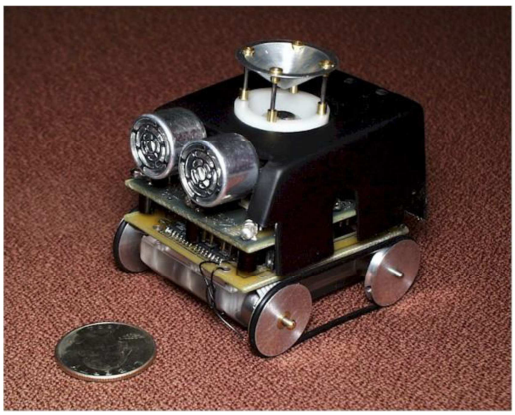

Fig 1.2

Legged Robots

To have a platform with legs that are able to deliberately choose contact points on the ground is a vast advantage over wheels in many ways. Not only because of the previously mentioned reason that it can step over obstacles, but also for the fact that it can move smoothly over terrain. Consider a statically stable robot that moves one leg at the time and gently places it at a new stable position, the main body of such a robot would not forward smoothly like a boat, even on really rough terrain like in a forest. In Fig 2.1, Fig 2.2

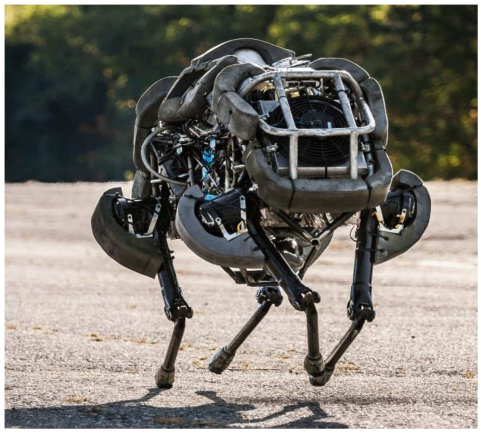

Fig 2.1

Fig 2.2

Tracked Robots

An alternative consists on tracked vehicles in Fig 3.1. Although they present increased mobility in difficult terrains they are not able to surpass many of the found difficulties and its energy consumption is relatively high.

Fig 3.1

Fig 3.2

3. CONCLUSION

The work describes the modelling and types of a steps climbing robot based on the mechanism. In this paper we can also see the sub-division on the their motion of the working Not only these future development on the robot is still working to form a simple robotic design using power screws

4. FUTURE SCOPE

The following directions could be pursued for the future enhancement of the present project in terms of fully or partial (function specific) autonomous operation:

- Develop control algorithms and sensing techniques that allow the hybrid mobile robot system to operate autonomously in unstructured environments.
- In the future work, sensors, cameras, manipulators can be added to the robot frame. The robot can then serve complex tasks in dangerous areas remotely.

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