

# Universal Linear Motion Wheel Mechanisms (Draft)

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## Abstract

Universal Linear Motion Wheel Mechanisms

*Keywords:* Affordable autonomous agricultural vehicles, Smart farming, Walking robots, Compound robots, Compound linear actuator

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## 1. Introduction

A universal linear motion wheel(ULMW) is a type of mechanism used to create compound linear motion mechanisms to enable long range linear motion. Practical ULMWs can be classified according to: 1. Type of motion 2. Number of links 3. Number of Degrees of Freedom 4. Type of locomotion scheme

### *1.1. Classification according to the type of motion*

1. Continuous motion
2. Intermittent motion

### *1.2. Classification according to the number of links*

1. 5 Bar ULMW
2. 6 Bar ULMW

### *1.3. Classification according to the number of DoFs*

1. 1 DoF
2. 2 DoF

### *1.4. Classification according to the number of DoFs*

1. Wheeled
2. Legged

Technically wheeled ULMWs can be converted to legged ULMWs by adding legs to them.

Several other types of ULMW mechanisms can be built.

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**2. 5 Bar ULMWs**

**3. 6 Bar ULMWs**

**Continuous Motion Legged ULMW**