

MANUAL ROBOTICS

GOLEM

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TECH-FESTS:

IIT MADRAS (SHAASTRA-2014) {Design-3rd}

IIT KHARAGPUR (KSHITIJ-2014) {Competition-3rd}

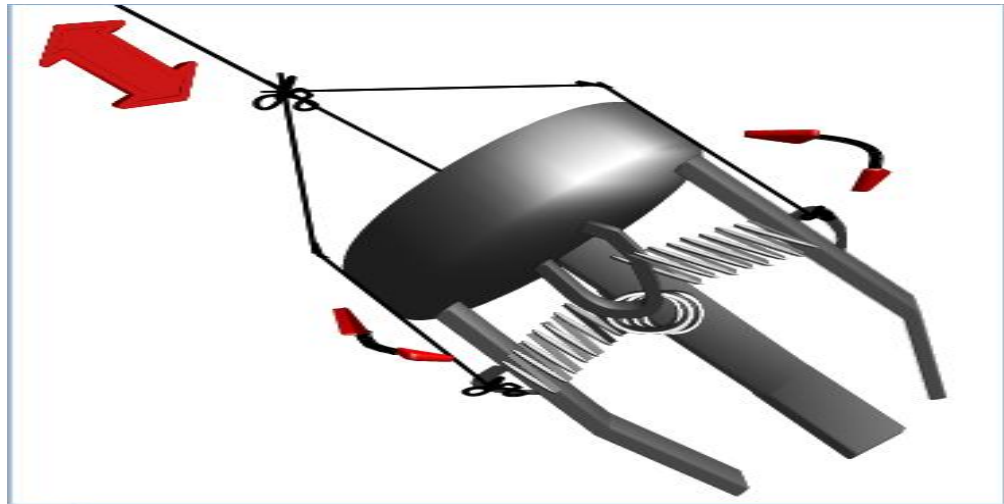
MECHANISMS USED:

- **PICKING AND DROPPING MECHANISM:**

- **At Madras:**

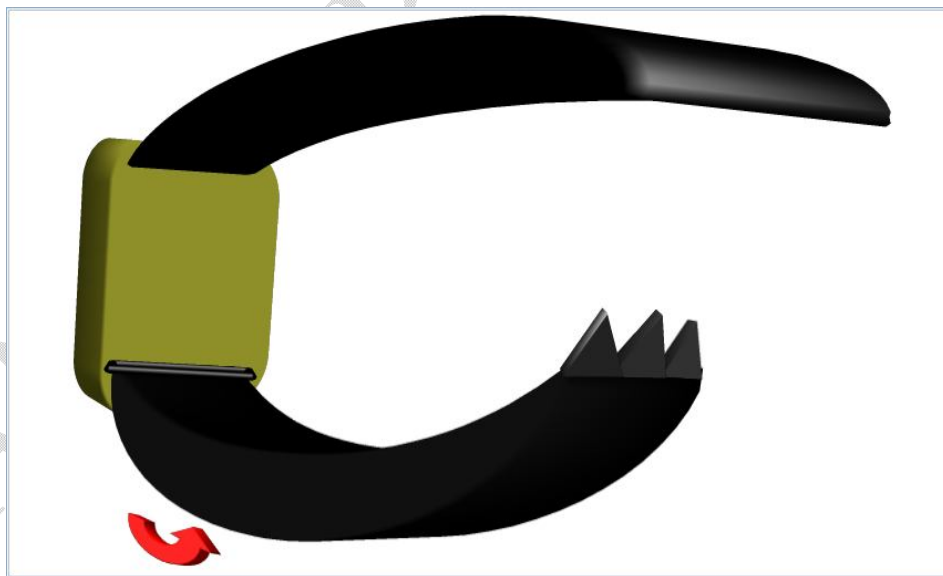
In this mechanism there is a circular plate to which jaws are hinged. Below this circular plate there is a hook to which springs from each jaw are hooked. Along with this, cables from each jaw are collected at the top of the circular plate and this cable is attached to the motor which is supported. With

the help of this motor we can pull the cable as the mechanism approaches the ball to be picked up so that the jaws descend smoothly into the gaps



- **At Kharagpur:**

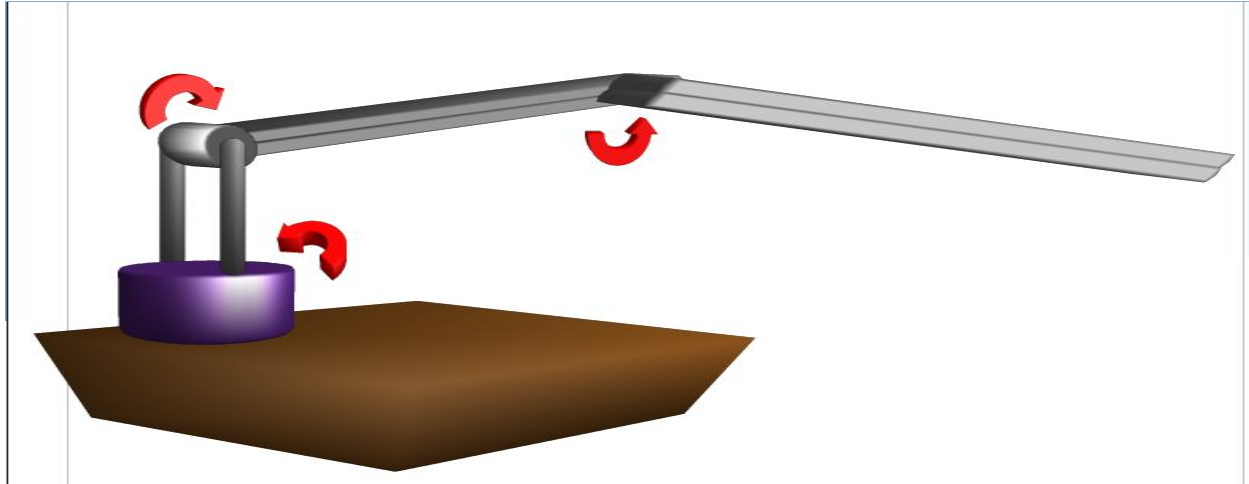
This consists of two rectangular plates. One of these plates is bent at its edge and is fixed to a rectangular plate. The other plate is bent and toothed at its end. This was allowed to move into the bent first plate or to move away from the first plate with the help of a cable which is drawn or let loosed by a motor.



- **Supporting mechanism:**

- **At Madras:**

This mechanism consists of two links which are hinged at their extreme ends so that they can tilt front and back. One of these two links, the first one holds the picking and dropping mechanism and the other is connected at the other end of the first link. These two links are rotated by the disk that is connected at the bottom of the second link.



- **At Kharagpur:**

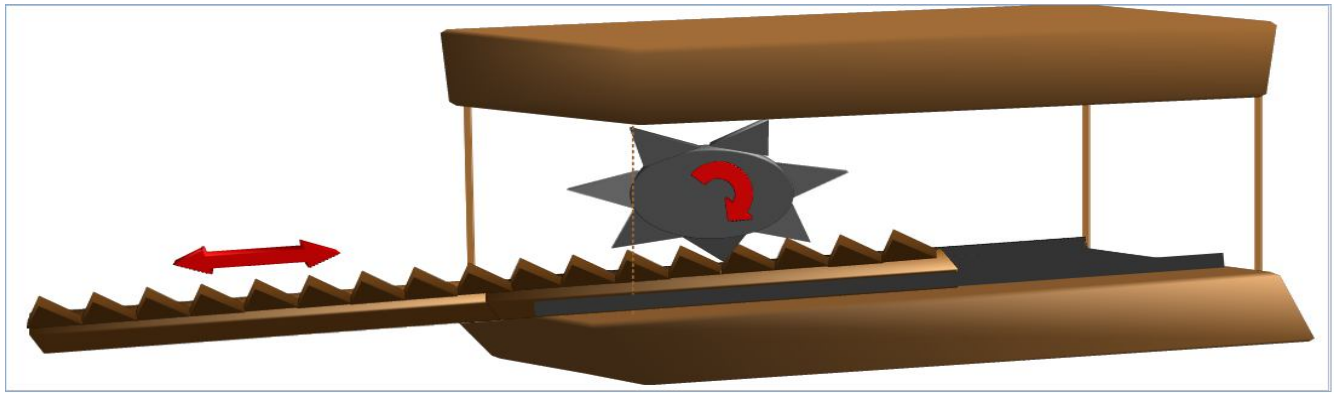
This mechanism has only one link and is mounted on the disc that rotates. The link supports the picking mechanism on one of its end and on the other end a counter weight is attached. The whole set up is hinged on a wooden rod which is mounted on the rotating disc.



- **STRIKING MECHANISM:**

- **At Madras:**

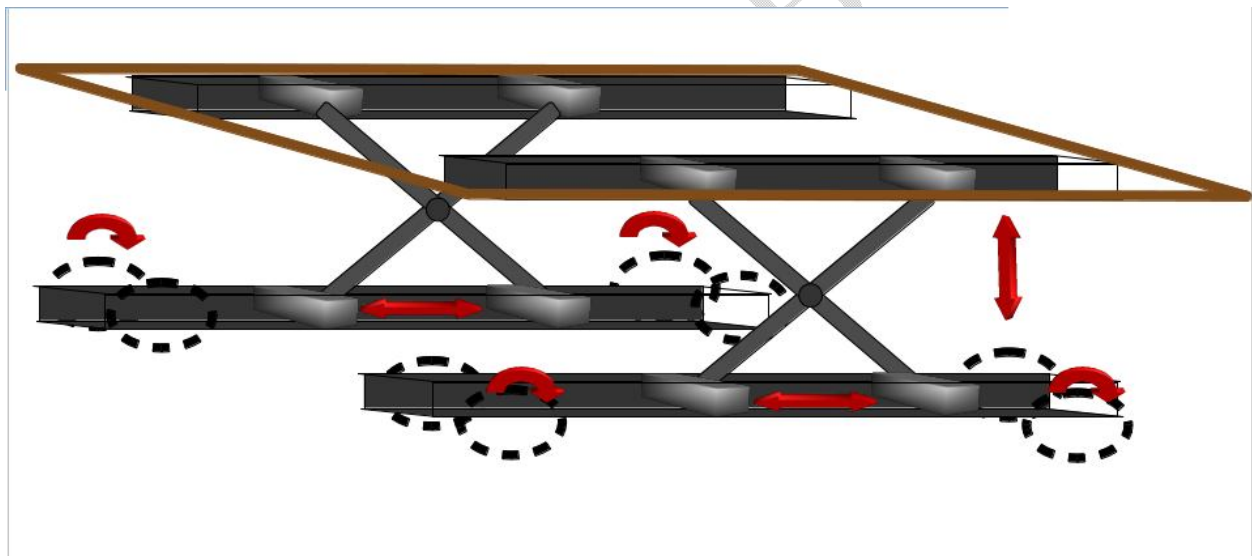
This is a simple rack and pinion mechanism. This is used to strike any hurdle that comes in front of the robot. This has a rack that moves front and back in a guide and a pinion attached to a motor that rotates along with motor to aid in the movement of the rack.



- **LIFTING MECHANISM:**

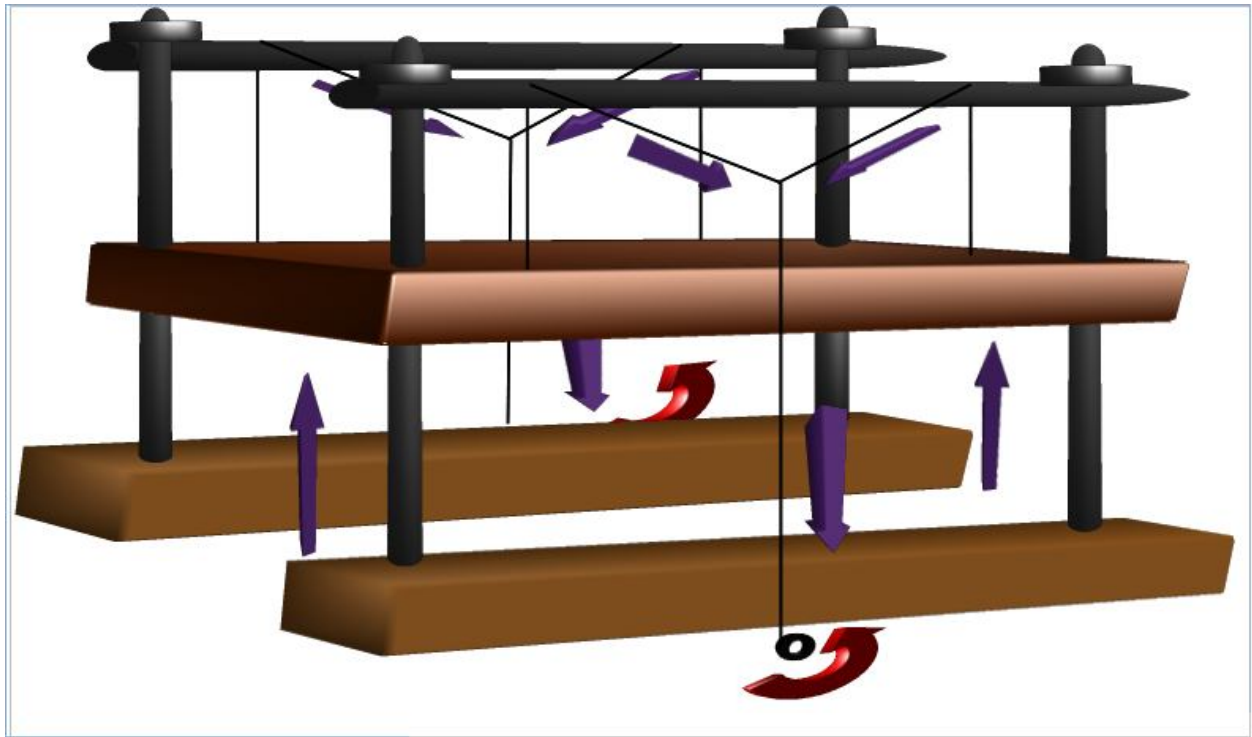
- **At Madras:**

- This mechanism consists of cross links that are pulled towards each other so that the chassis that lies on these cross links lifts up. The pulling is done by attaching a cable to a motor that winds the cable in clockwise and let-looses the cable in anti-clockwise direction.



- **At Kharagpur:**

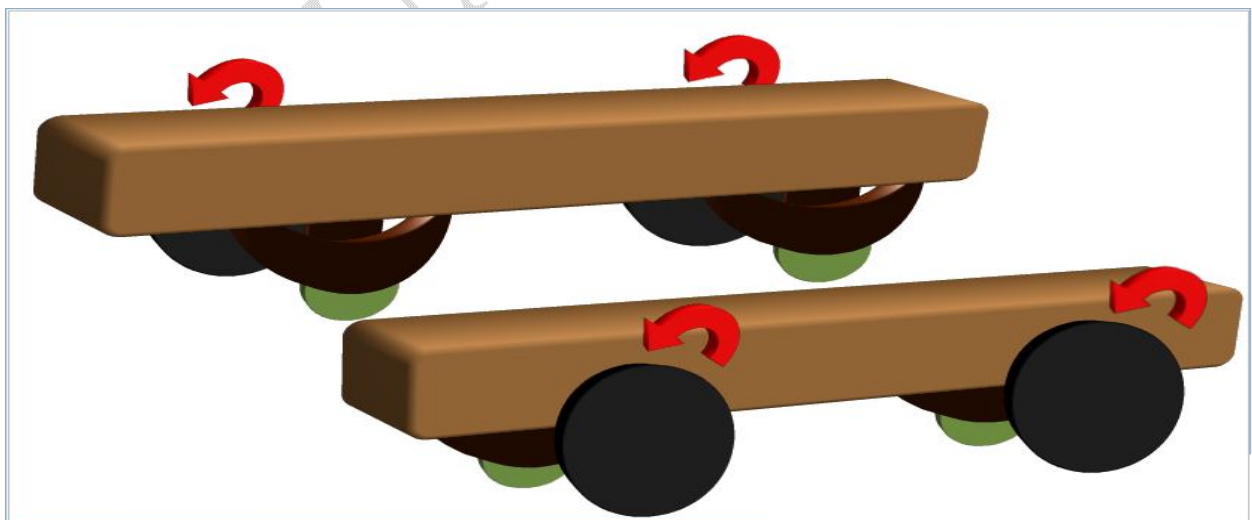
- The mechanism here consists of a frame on which a cable that is attached to the chassis is wound on to a motor that is attached to the wooden bars at the bottom near the wheels so that when the motor rotates the chassis is lifted up.



- **TRAVERSING MECHANISM:**

- **At Madras and Kharagpur:**

- The traversing is done by attaching eight wheels on two bars for the robot that is capable of lifting its chassis and the common four wheel mechanism that is incapable of lifting its chassis. Among the eight wheels four are not attached to the motors but are made from the washers and supported by wooden art craft.



IMAGES OF THE PHYSICAL ROBOT:









Thank You All