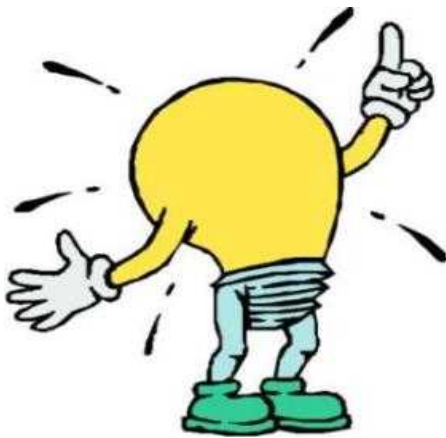


Enes Dayangac
2009-06-06
Bonn Rhein Sieg Hochschule

**An idea: How a robot can exchange
light bulbs?**



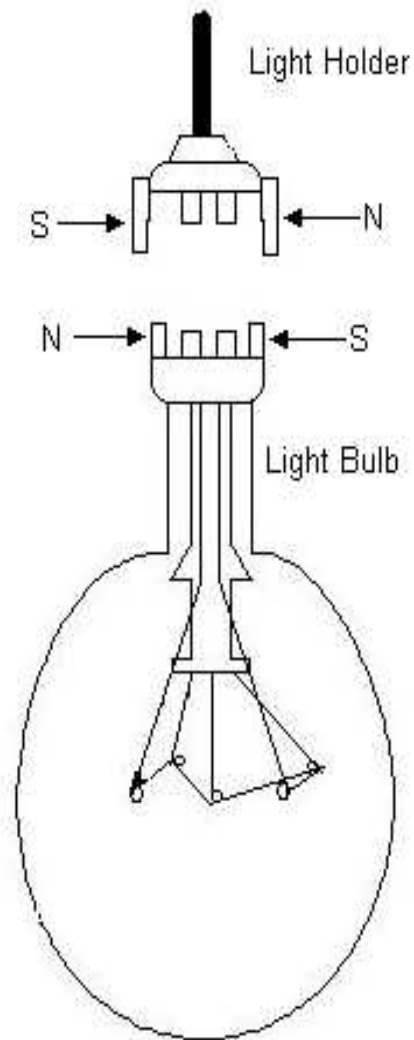


My first question is how this robot should look like. (Scenario1)

-I imagine that we have a robot and this robot has a long arm or a lifter system what lifts up a bulb.

-The left figure is just an example to lift an appropriate thing manually. This lifter can be modified for holding a light bulb and lifting up-down automatically by using a motor.

-This lifter can be assembled on a low cost autonomous robot.



My second question is how can I make exchanging light bulbs easy. (Scenario2)

-I will change shapes of light bulb and lamp holder (armature, light socket). Both light bulbs and lamp holders will include two magnets (N,S) on them. Magnets should be enough strong to carry a light bulb.

-This means when a light bulb is close enough to a lamp holder, the lamp holder will catch the light bulb and light bulb will be hanged there. On the left figure, this is my imagination. It could be better.

-I imagine also there is rf transmitter with lamp holder. When switch on and there is no current flow, this means the bulb does not work. In that case, it starts to send a known signal.

Final question is how my robot will sense the broken light bulb. (Scenario3)

- The robot will have an RF receiver and very good designed antenna arrays.
- The robot always will check whether there is a desired signal or not. If there is a desired signal, robot starts to move through a direction to get the signal whose strength is more. This means that robot is getting closer to the broken light bulb. When it gets to the most closest points, it will start to lift up to reach and get the broken light bulb by using still signal strength. After holding the bulb, it move it down because of the magnets. Later on, it will do the same thing to put a new bulb there.
- After putting the new light bulb there, the light will be on and there will be current flow from phase to neutr, so radio signal will be stopped.
- I believe this idea can be improved well because electronics components and magnets are cheap. RF transmitters and receivers can be implemented in low cost. Consequently, these required components will not increase overall cost of production of light bulbs and holder much.