

Asphalt Composing from Garbage Origin for the Purpose of Rectifying Abruptive Flaws in Asphalt Surface Robot

The robot's design is used to recycle garbage off sidewalks and compose asphalt for the purpose of fixing urban potholes. The robot is powered by rechargeable batteries that are directly fueled by a solar panel located at the top of the robot. It carries out a chemical that will be used when the garbage canister is full. The trash canister has a 360 degree sensor that detects when it has reached its limit. The robot has sensors at the top of that detect upcoming garbage in its way and potholes on the road. Since the robot isn't needed everyday due to the fact that a pothole cannot be created in a day, it can be used once a month on days with acceptable weather.

The robot is driven autonomously programmed for the place it is located. It also carries a GPS to track the robot and make sure it follows the predetermined path. The robot uses two fans located on the bottom to pick up garbage off the sidewalk such as paper and small pieces of plastic. It then walks down to the street with traffic cones by its side to fill in the pothole. Since the chemical is used, it dries up the asphalt in seconds preventing any traffic for vehicles on the road. The robot also has rollers on the bottom of the robot to help sweep the garbage into the fan.

I began the project brainstorming and then looked at the Autodesk Sustainability Workshop videos and tutorials that completely expanded all of my thoughts and made change that robot to have less waste material. It also helped me make my robot play two roles that address environmental issues in a positive way by recycling and reusing garbage. After brainstorming and drawing sketches out for the robot for the second time, I used Autodesk Inventor to assemble the parts and build. The create button when building assemblies was very helpful when I needed to make something quick and saved a considerable amount of time.

I decided to use twenty-two wheels due to its size to fit in half a sidewalk. Since it is about thirty by thirty inches the wheels would collapse if I used the normal four wheels for the robot due to its weight. I was trying to get the biggest wheels possible to travel faster but also needed omni-directional which the biggest size was an inch smaller than the larger regular wheel. If I used them like that there would be too much friction so I went with twenty-two of the regular and omni-four inch wheels so there wouldn't be as much friction as there would be. There are eight omni-directional to turn and steer and fourteen regular wheels to drive. There are also twelve motors for the wheels and is mostly made of aluminum to make the robot have a great amount of power.

Since most of the robot was made of aluminum it would be lightweight. I wanted to make the robot fifteen by fifteen inches but realized it would have been too small. It would have had only one small fan and would have a small garbage canister to make less asphalt. The asphalt will not have even lasted for one regular sized pothole. Although it uses more metal, it is still better for the robot to be bigger. If the robot was smaller and couldn't do the work right, there would be not much use for the robot.

I was going to use a shovel to pick up the trash and debris but the shovel wouldn't have done a good job due to the fact that it couldn't have pick up all the trash and probably would have dropped it. The fan was a better idea because it could complete all the tasks necessary the shovel could not.