

Review:

There are multiple ground robot configurations:

- Omni-directional
 - Can point its wheels in any direction and apply power to move
- Bicycle model
 - Has two motors
 - One controls Speed
 - One controls Direction
 - Commonly used in self-driving cars
- Differential drive
 - Each motor controls speed and direction on one side of the robot
 - If both side have wheels moving forward at the same speed, then the robot goes straight
 - If each side of the robot has wheels spinning in opposite directions, then the robot spins in a circle
 - If both wheels are moving in the same direction but at different speeds, then the robot travels in an arc motion

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Challenge Questions:

Create a list of strategies/guidelines that you would use to determine which type of drive system a selected ground robot will get.

If the robot will be working in slippery terrain, then use a **differential** drive.

If there are robots working in roads, aisles, ect., then have them use the **bicycle** model.

If there is a robot that will be working around humans, then give it an **omni-directional** drive.

Let's try it out! Using your criteria above, how would your guidelines determine which drive train these robots get. Justify your selection.

Robot	Drive type configuration	Justification
<p>Tractor This robot will be on uneven ground and will need to mow lawns.</p>	<p>Differential</p>	<p>There are more wheels grabbing for traction in slippery environments to pull the robot in the correct direction.</p>
<p>Warehouse This robot will be working on a smooth factory floor and will need to move palettes from one row to another</p>	<p>Bicycle</p>	<p>This will allow them to travel in a straight line without much computer processing. Only the steering motor will need to adjust its wheel(s).</p>
<p>Office/Hospital This robot will be moving around people and objects and placing items in various locations that may change (putting items on available shelf space, ect.)</p>	<p>Omni-directional</p>	<p>This way, the robot can steer clear of people and people's things more quickly and easily. Humans create an environment that is constantly changing - placing boxes in aisles, shifting items on a shelf, ect. An omnidirectional robot will be able to adapt to this chaotic environment more easily than other drive types.</p>

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