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| **Issues** | **Why this is an issue** | **Resources we will utilise** | **Solutions** |
| Start/Stop by processing a sound output such as a whistle or a clap | We only want the robot to operate when demanded. | **Sound Sensor** | We will use a specific sound to activate the robot such as a clap. |
| How would we enable the robot to move forward, left, right and backwards? | A robot that requires a ball being kicked into a goal needs mobility. | 2 **Motors and 2 Wheels** | Attaching the robot with these components will allow mobility. |
| How would the robot guide the ball into a better position that is 40cm away from the goal? | If the robot won’t sense the distance correctly, then it would lead to it crossing over the line which is disqualification. | **Ultrasonic Waves, Infrared waves** | The ultrasonic waved would send out a wave that is 40cm away from the goal which would mean it would travel a total distance of 80cm to send the data back to the sensor. |
| How would the robot communicate to stimuli? | Dr Jenner drops obstacles and it needs to be able to carry on what its programmed to do by avoiding the obstacles. | **Ultrasonic Waves, Infrared waves** |  |
| How would the robot distinguish between two different objects? | We don’t want it kicking anything apart from the ball.  We don’t want it to be a threat. | **Ultrasonic Waves, Infrared waves** | The waves would be programmed to identify specific dimensions. Therefore, it will only receive certain waves back depending on the balls dimensions. |
| How is the robot going to respond to stimuli? | The robot must shut down itself without creating further health and safety issues. | **Touch Sensor** | The touch sensor will let the robot know that it has hit something which is something that it shouldn’t do. This data will then be translated into algorithms which will tell it too shut down immediately. |
| How would the Robot be able to kick or throw the ball? | The robot must transfer kinetic energy to the ball for it to be a goal. | 2 motors and power. | The motors will use electricity supplied from the batteries which will allow current to be flowing throughout the robot. |
| Where the optimum position of the battery is going to be? | Due to the surface of the terrain we are using which is a carpet, it is going to become very resistant towards the wheels. Hence why changing the batteries is going to be necessary. | Battery Pack | The optimum location would be the clearest location on the robot. This would decrease the amount of hassle whilst changing batteries allowing a more efficient outcome. |
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