A Servo Motor Research

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Servo Motor Analysis:

Servo motor is a kind of brushed or brushless DC motor with gear pairs and encoder. It is used in industry such as; CNC and robot arms because it provides compact size and easy precise positioning.

* Noise: -1 when the load increases, it gets noisy.
* Precision: If motor does not have bearing ; 0 and If motor has bearing ; 1
* Durability: -1 when the load increases, gear pairs can get damage easily.
* Cost: -1 because it is used generally in industry, not in small projects.
* Ease of Control: 1 because it has its own encoder.

With respect to these results, brushless DC motor again wins. Moreover, in our project, we do not need compact size, and we can get high mechanical work output with using brushless DC motor. Also, we can get precision for brushless DC motor by using encoder which is not a big problem.

HITECH HS-815BB MEGA SAIL SERVO may not carry our robot because our robot will have weight more than 20 kg, and the output torque of this motor is 19.8 kg.cm at 4.8 Volt. Hence, it can get damage specially at its gear pairs.

NOTE:

We should not use stepper motor because the sudden change in the direction of motion will create sudden change in the momentum of robot which can yield big force. Due to that force, stepper can miss a step, and it can start to rotate freely, but it is unwanted during the motion of robot because it will cause losing conrol of the robot. We need to control wheels while robot is moving.

Brushless DC motors can also rotate freely if it is needed.