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Topic: Image Recognition based Master Slave Manipulation

Description:

The project will be a Master-Slave Manipulator mechanism that will read the gestures in real-time with the code we will be implementing. The user / Master will point his/her hand towards the camera which in turn will process, what we want our machine to do. This data post-processing will be sent to a server. The data received by the server will be relayed to the device that will be controlling the actuator assembly with 2 degrees of freedom. The data will be of the form of either analog or digital depending upon the nature of the signal generated by the real-time gesture recognition algorithm we will be implementing. The functionalities can include a variable gain in the motion control that can amplify the effects of the gestures perceived by the system. The mechanical actuation can be realized using an open-source embedded system and the circuit can be implemented by the team members. The power system will be used that can deliver around 30 Watts of power.

The end system realized will be able to use a mechanical arm that will mirror the gestures made by the user according to the defined task.