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Team G: Excalibr
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EXCALIBR

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Individual Progress

1.Robot Arm control

   The current status of the robot arm control was to get familiar with the robot arm itself. We could use the Flexpendant to control the robot arm in the easy movement now. The usage of the Flexpendant is quite simple and by testing the limitation of the robot arm work range could let us test the safe work space is valid and match to what we set in the simulation environment. The next step would be upload the designed path that from the simulation.

2. Signal configuration

2.1 Hardware

   To generate the output signal, the DSQC card(Fig. 2) was necessary. However this card was not in the standard package,so we have to order it now. After acquiring the DSQC card, we would got the 24 I/O to generate the signal in 24V. So we need the voltage regulator to make the output voltage fit our trigger system(5v).

2.2 Software

   When we correctly connect the DSQC card, the ABB controller could automatically to detect the card. Then we could set the configuration of the output signal mapping to the actual port on the card.

Figure 2. DSQC card

Challenges

   The challenge of the robot controlling was lacking the experience of the standard process. Due to that, we would meet some different problems every time we try to use the robot arm which would cause the time wasting on figurating the problem. In this PR, The professor Dolan and the TA Sean suggested us to consult the ABB robot users in CMU. We already started to contact them, and hope their experience would be useful for us to control the robot arm.

Teamwork

Work	Work is done from last PR	Name
Sensor noise	Read and Shot noise	Sid
Color calibration	Test color mapping function with nonlinear model	Mandy
Robot simulation and control	Try to control the real robot arm and configure the signal setting	Peter
Path planning	Camera model evaluation function : scale and distribution-result	Cece
3D Scene generation	Blender Pipeline & Target modeling	Sam

Future Plans

For the robot simulation and control, the next steps are

1.ordering the DSQC unit and set up it.

2. upload the designed path to the controller and test run on the robot arm.