How to do the initialization routine for the arm

Juan Rojas <rojas70@gmail.com>Tue, Nov 25, 2014 at 11:51 PM
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Please refer to the previous flow diagram I sent in the last email. Remember to fork my code and create a new branch for this work please.

1 Determine condition for the end of the task.

- Under the AssemblyStrategy::StateSwitcher, we need to create a new condition: hsaMating2End (my naming standard may be off from the code, I am not looking at it directly)
- The condition, I believe, is easiest if we make it time based.
  - For failure: switch to terminate or an initialization routine after 8 seconds (will need to run a few trials to get an idea)
  - For success: switch to terminate or an initialization routine after 15 seconds.
  - We can create a control flag in the preprocessor directive to indicate whether or not we want to run initialization routines at the end of the code.

2 Initialization Routine

- Reset time counter.
- Reset nextState number.
- Close current set of files, open a new set of files.
  - The files that are opened would be best organized if we can create them either inside a folder with some name, or modify their ending such that we can keep track of them in an intuitive way. For example, their name reflects their deviation.

- Insert a new set of deviation directions.
- Move the arm to the hope position.
  - This may involve the most work.
  - Need to record the position of the end-effector into a variable. This can be done in hiroArm::wrist2EndEffXform.
  - Call an IKinCompositionController identical to the way that it is done in AssemblyStrategy::StateMachine - hsaApproach.
    - Another tricky part of this is how to pass the correct goal position. Normally, the position is read from file during the AssemblyStrategy::ProcessTrajFile, here we could just assign the position from the variable calculated two points earlier.
    - The arm should move with the inverse kinematics control call.

- Get the latest position by calling hiroArm::get_curr_handpos
- Call hiroArm::PivotApproach or AssemblyStrategy::StateMachine start from scratch.

3 Create a file of deviation possibilities

- This file could be created with matlab/octave under some scheme. I.e. random deviations in x/y/yaw for the 7/13 classes.
- This file can then be saved to the src/OpenHRP3.0/Controller/IOserver/robot/bin/data/PivotApproach/Deviations location.

- New deviations should be read in the initialization routine.
- I am sure I may be leaving out some details, let me know if you can tackle this or not.

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