*Florida International University*

*School of Computing and Information Sciences*

CIS 4911 - Senior Capstone Project

Software Engineering Focus

Installation Guide

Project Title:

Robotic Arm 1.0

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**Github Repositories:**

There are 4 github repositories that you will need to clone. One will be cloned on Telebot, the others on the remote computer.

**Telebot:**

1. Ensure Telebot is connected to a network with internet access.
2. Open Git Shell.
3. At the prompt in Git Shell, enter *git clone --recursive* [*https://github.com/FIUDiscoveryLab/TelebotSlaveArms.git*](https://github.com/FIUDiscoveryLab/TelebotSlaveArms.git)and press ENTER.
4. When the repository has been cloned, you can close Git Shell.

**Remote Computer:**

1. Ensure the remote computer is connected to a network with internet access.
2. Open Git Shell.
3. At the prompt in Git Shell, enter *git clone --recursive* [*https://github.com/FIUDiscoveryLab/TelebotMasterArmsTCP.git*](https://github.com/FIUDiscoveryLab/TelebotSlaveArms.git)and press ENTER.
4. When the repository has been cloned start to clone the next repository, at the prompt in Git Shell, enter *git clone --recursive* [*https://github.com/FIUDiscoveryLab/TelebotMasterArmsTCPVoice.git*](https://github.com/FIUDiscoveryLab/TelebotSlaveArms.git)and press ENTER.
5. When the second repository has been cloned, start to clone the last repository, at the prompt in Git Shell, enter *git clone* [*https://github.com/FIU-SCIS-Senior-Projects/RobotArm.git*](https://github.com/FIU-SCIS-Senior-Projects/RobotArm.git)and press ENTER.

**Telebot Arm Servo Tester App:**

1. On the Remote Computer open the folder containing the FIU-SCIS-Senior-Projects/RobotArm repository.
2. Open the RobotArm/src/Deployment.
3. Copy the ServoFeedbackTestApp.jar file and the ServoFeedbackTestApp\_lib folder onto an external drive.
4. Move the external drive to Telebot and copy those files onto the desktop.
5. The App can be run by double clicking the ServoFeedbackTestApp.jar file.

**Slave Subscriber:**

1. On Telebot, open Eclipse and create a new workspace.
2. From the menu select File->Import to open the import dialog window.
3. Select Git->projects from Git and click Next.
4. Select existing local repository and click next.
5. Click “add” in the top right part of the screen and navigate to the TelebotSlaveArms repository that you cloned earlier and click OK
6. Check the box next to the name of the repository and click finish.
7. Select TelebotSlaveArms and click Next.
8. Select “Import existing Eclipse projects” and click Next.
9. Select TelebotSlaveArms and click Finish.
10. The repository should now be visible in the navigator, Right click on the project name and select Properties.
11. On the left side of the Properties window, select Java Build Path, then open the Libraries tab to the right.
12. Click “Add External JARs”.
13. Select TelebotSlaveArms/ThirdParty/JSSC/JSSC.jar and click open.
14. Click “Add External JARs”.
15. Select TelebotSlaveArms/ThirdParty/ndds.5.1.0/class/nddsjava.jar and TelebotSlaveArms/ThirdParty/ndds.5.1.0/class/nddsjavad.jar and click open.
16. Click “Add External JARs”.
17. Select TelebotSlaveArms/ThirdParty/SLF4J/slf4j-api-1.7.12.jar and TelebotSlaveArms/ThirdParty/SLF4J/slf4j-simple-1.7.12.jar and click open.
18. Click OK.
19. Right click on the project’s src folder and select “Build Path / Use as source folder”.
20. In the navigator right click on TelebotSlaveArms/src/discoverylab/telebot/slave/arms/test/TelebotSlaveArmsTest.java and select Run As -> Run Configurations.
21. Select the Environments tab and click New.
22. For the name enter LD\_LIBRARY\_PATH and for the value enter ${project\_loc}/ThirdParty/ndds.5.1.0/lib/i86Linux2.6gcc4.4.5jdk and click OK
23. To Run the Slave Subscriber, in the navigator right click on TelebotSlaveArms/src/discoverylab/telebot/slave/arms/test/TelebotSlaveArmsTest.java and select Run As -> Java Application.

**IMU Master/Publisher:**

1. On the remote computer, open Eclipse and create a new workspace.
2. From the menu select File->Import to open the import dialog window.
3. Select Git->projects from Git and click Next.
4. Select existing local repository and click next.
5. Click “add” in the top right part of the screen and navigate to the TelebotMasterArmsTCP repository that you cloned earlier and click OK
6. Check the box next to the name of the repository and click finish.
7. Select TelebotMasterArmsTCP and click Next.
8. Select “Import existing Eclipse projects” and click Next.
9. Select TelebotMasterArmsTCP and click Finish.
10. The repository should now be visible in the navigator, Right click on the project name and select Properties.
11. On the left side of the Properties window, select Java Build Path, then open the Libraries tab to the right.
12. Click “Add External JARs”.
13. Select TelebotMasterArmsTCP/ThirdParty/JSSC/JSSC.jar and click open.
14. Click “Add External JARs”.
15. Select TelebotMasterArmsTCP/ThirdParty/ndds.5.1.0/class/nddsjava.jar and TelebotMasterArmsTCP/ThirdParty/ndds.5.1.0/class/nddsjavad.jar and click open.
16. Click “Add External JARs”.
17. Select TelebotMasterArmsTCP/ThirdParty/SLF4J/slf4j-api-1.7.12.jar and TelebotMasterArmsTCP/ThirdParty/SLF4J/slf4j-simple-1.7.12.jar and click open.
18. Click OK.
19. Right click on the project’s src folder and select “Build Path / Use as source folder”.
20. In the navigator right click on TelebotMasterArmsTCP/src/discoverylab/telebot/master/arms/test/TelebotMasterArmsTCPTest.java and select Run As -> Run Configurations.
21. Select the Environments tab and click New.
22. For the name enter PATH and for the value enter ${project\_loc}/ThirdParty/ndds.5.1.0/lib/x64Win64jdk and click OK
23. To Run the IMU Master/Publisher, in the navigator right click on TelebotMasterArmsTCP/src/discoverylab/telebot/master/arms/test/TelebotMasterArmsTCPTest.java and select Run As -> Java Application.

**Voice Master/Publisher:**

1. On the remote computer, open Eclipse and create a new workspace.
2. From the menu select File->Import to open the import dialog window.
3. Select Git->projects from Git and click Next.
4. Select existing local repository and click next.
5. Click “add” in the top right part of the screen and navigate to the TelebotMasterArmsTCPVoice repository that you cloned earlier and click OK
6. Check the box next to the name of the repository and click finish.
7. Select TelebotMasterArmsTCPVoice and click Next.
8. Select “Import existing Eclipse projects” and click Next.
9. Select TelebotMasterArmsTCPVoice and click Finish.
10. The repository should now be visible in the navigator, Right click on the project name and select Properties.
11. On the left side of the Properties window, select Java Build Path, then open the Libraries tab to the right.
12. Click “Add External JARs”.
13. Select TelebotMasterArmsTCPVoice/ThirdParty/JSSC/JSSC.jar and click open.
14. Click “Add External JARs”.
15. Select TelebotMasterArmsTCPVoice/ThirdParty/ndds.5.1.0/class/nddsjava.jar and TelebotMasterArmsTCPVoice/ThirdParty/ndds.5.1.0/class/nddsjavad.jar and click open.
16. Click “Add External JARs”.
17. Select TelebotMasterArmsTCPVoice/ThirdParty/SLF4J/slf4j-api-1.7.12.jar and TelebotMasterArmsTCPVoice/ThirdParty/SLF4J/slf4j-simple-1.7.12.jar and click open.
18. Click OK.
19. Right click on the project’s src folder and select “Build Path / Use as source folder”.
20. In the navigator right click on TelebotMasterArmsTCPVoice/src/discoverylab/telebot/master/arms/test/TelebotMasterArmsTCPVoiceTest.java and select Run As -> Run Configurations.
21. Select the Environments tab and click New.
22. For the name enter PATH and for the value enter ${project\_loc}/ThirdParty/ndds.5.1.0/lib/x64Win64jdk and click OK
23. To Run the Voice Master/Publisher, in the navigator right click on TelebotMasterArmsTCPVoice/src/discoverylab/telebot/master/arms/test/TelebotMasterArmsTCPVoiceTest.java and select Run As -> Java Application.

**Mocap Studio:**

1. Go to the computer in the Discovery Lab with the 3D printed case (if you can’t find it, ask one of the friendly staff to show you where it is.)
2. Copy the c:/Mocap Studio folder onto an external drive.
3. Copy the Mocap Studio folder onto the remote computer.
4. Go to the github folder and open RobotArm/src/Animator and copy animator-0406-2016-cox.py, math\_lib.py, and animator\_utils.py into the Mocap Studio folder.
5. To run Mocap studio, double click on animator-0406-2016-cox.py to open it in PyCharm.
6. In PyCharm, right click on the tab containing animator-0406-2016-cox.py and select run.