README

To run the code, download all of the folders.

Change the folder paths in the DEMO file to match where those files / folders are on your system and then run the program.

Specifically, you must change the paths to the folders where the collected and validation data is located. For the validation data, only get the path to the directory containing the **male 2** dataset, which is stored in a MatLab file.

It is a good idea to step through the code, so you can see each step of the process.

The paths near the ShowModelDemo parts of the DEMO code should be replaced to match the paths to those validation and collected data models on your system. This part of the code is use to load models you built when you ran the getExpModel function for both the SVM and CNN. The models with accuracies greater 90% will be automatically saved in the MODELS folder in the CODE folder.

The TestRatio can be modified to change what ratio of the data is reserved for testing the models at the end of training.

The RunCount can be modified to however many builds of the SVM and RNN classifiers you want to do, because building the final training/testing confusion matrices that summarize the results of all those sessions.

UseValidationData can be set to 1 to build, train, and test the models on the validation data. It can be set to zero to do the same, but with the collected EMG data.

NeedToPreprocess can be set to 0 after you have already processed the data once. This is good, so you don’t have to preprocess the data repeatedly, if you run the code over and over again. It should be set 1 every time you change the value of UseValidationData.

DemoCNN/DemoSVM can be set to 1 to build and demo the RNN/SVM. Or it can be set to zero to turn off building and demoing of the RNN/SVM.

ShowModelDemo can be set to 1 to load one of the models created when you ran the getExpModel code for the SVM or the RNN.

BuildModels can be set to 1 to build the RNN and SVM models. It can also be set to 0 to not build these models, if you already have a model loaded into MatLab.

All third-party code not available directly from MatLab is included in the code; however, to get the latest updates and for the sake of documentation the sources are summarized here.

MatLab 2018a required. BiLSTMLayer in the NN is not available in any other version.

plotConfMat - used to create the confusion matrix plots

<https://www.mathworks.com/matlabcentral/fileexchange/64185-plot-confusion-matrix>

Neural Network Toolbox in MatLab

Computer Vision System Toolbox in MatLab