

Data Dictionary:

Dataset Numbering:

1-6: Torque-Orientation Control

1_: Resistive, StA

2_: Resistive, AtS

3_: Compliant Passive, StA

4_: Compliant Passive, AtS

5_: Compliant Active, StA

6_: Compliant Active, AtS

7-12: Force-Position Control

7_: Resistive, StA

8_: Resistive, AtS

9_: Compliant Passive, StA

10_: Compliant Passive, AtS

11_: Compliant Active, StA

12_: Compliant Active, AtS

General Naming:

_S : Sigma

_A : ARMin

_W : recorded on Windows [.mat]

_L : recorded on Linux [.csv]

AtS: ARMin to Sigma (demonstrator = ARMin, observer = Sigma)

StA: Sigma to ARMin (demonstrator = Sigma, observer = ARMin)

CP: Compliant Passive

CA: Compliant Active

R: Resistive

Tabled

Name	description	unit
eePos	End effector Position	[m]
eeF	End effector Force controlled	[N]
eeF_m	End effector Force Measured	[N]

eeJ / eeQ	End effector orientation	[deg]
eeT	End effector Torque controlled	[Nm]
eeT_m	End effector Torque Measured	[Nm]
Z	Impedance	[N/(m/s)]
Info	Time, dt, graspflag	

Names in table are accompanied with _S & _A to mark Sigma or ARMin respectively

Scripts:

Compliant_plotter.m

(FP: for Force-Position experiment & TQ: for Toque-Orientation Experiment)

- Plots pospos(incl error)
- Force force plot
- pos tracking error(boxplot)
- pos tracking error %ROM (boxplot)

Resistive_plotter.m

(FP: for Force-Position experiment & TQ: for Toque-Orientation Experiment)

- Plots controller force tov demonstrator Pos
- Plots measure force tov demonstrator pos
- Plots force tracking error (measured – controlled) for each robot
- Boxplots of absolute force tracking error for each robot

ROMCalculator.m

- From sigma.csv and armin.mat calculates the min and max position/orientation per direction (x,y,z)

Impedance Ratio.m

(Only fully correct for FP, TQ is having time vector issues)

- Plots impedance Sigma
- Plots impedance ARMin
- Plots Impedance Ratio

UDP_Filter.m

(pre selecting only the UDP communication of the system, saves the vectors)

UDP_updaterates.m

Calculates updaterates per connection from .csv files saved from UDP_Filter.m

HtT (Host to Target), TtH (Target to Host), HtL (Host to Linux (recorded on Host)), HtLL (Host to Linux (recorded on Linux)), LtH (Linux to Host (recorded on Host)), LtHL (Linux to Host (recorded on Linux))

Processor_simulink_data.m

Extract correct vectors from .mat file (recorded on host)

Split data by hand (only select Graspflag =0, and split in StA and AtS)

Saves vectors

Force_Position_preprocess.m / Torque_orientation_preprocess.m

Extract correct vectors from .csv file (recorded on Linux) and saves the vectors

Force_pos_splitplot.m / Torque_orientation_splitplot.m

Split data by hand based on graspflag, removing all parts where Graspflag = 0

Save data