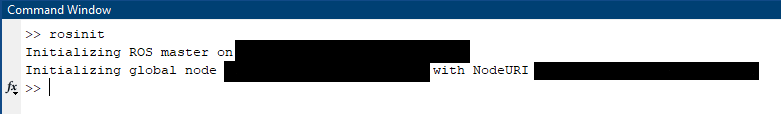
**Prerequisites: Software data transmission**

* Matlab Toolboxes:
  + Data Acquisition Toolbox
  + ROS Toolbox
* NI Software:
  + NI MAX App
* Matlab files and functions
  + in the working directory of the publisher:
    - Main\_Publisher
    - calculate\_CoP
    - connect\_sensors
    - ROS\_publish
    - ROS\_CoP\_Publish
    - synch\_acq
    - synchronize\_data
  + in the working directory of the subscriber:
    - Main\_Subscriber
    - StartButton
    - StopButton
    - make\_table\_point
    - make\_table\_wrench
    - ros1\_header2table
    - ros1\_wrench2table

**Manual: Software data transmission**

1. Create the Master ROS node for the publisher with the script *Main\_Publisher*. Type *rosinit* in the command line*.* The ROS master name which is displayed in the command window is necessary for the next step.



**Master name**

Figure : Creation Master Node

1. Enter subject number into field ENTER VALUES. Moreover, add the com ports of the shimmer sensors as cells made from strings.

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Automatisch generierte Beschreibung

Figure : Enter relevant information for publisher

1. For connecting the subscriber to the publisher open the script *Main\_Subscriber* andenter the ip address or the name of the ROS master was created above as a string into field ENTER VALUES.. Further, add the subject number.

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Automatisch generierte Beschreibung

**Master name**

Figure : Enter relevant information for subscriber

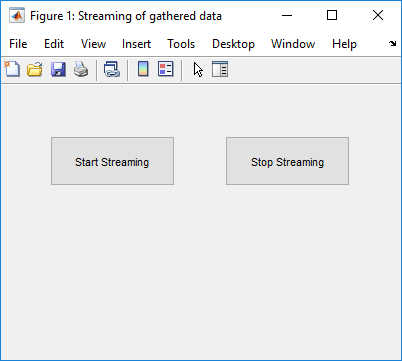
1. Start running the script of the subscriber. A GUI will open. Press the **Start Streaming** Button of the Subscriber.

Figure 7: GUI for the subscriber

1. Ein Bild, das Text enthält.

   Automatisch generierte BeschreibungThen start running the script of the publisher for acquiring the necessary data. A figure window pops up as seen below. To stop the acquisition, click onto the window or push any other button the keyboard.

Figure : Figure pop up for continuous acquisition

1. The figure is then closed, and the acquisition is stopped as well. The data will be sent automatically and is finally saved in a folder containing the subject number as raw data.

|  |
| --- |
| Ein Bild, das Text enthält.  Automatisch generierte Beschreibung |
| *Figure 8: Final text displayed in the publisher when successfully sent* |

1. When successfully receiving the data, the subscriber gives information when reaching the last sensor by displaying how many seconds of data had been sent already. If no new seconds are added, everything is received, and the GUI can be used again to press **Stop Streaming**. The data is then saved in different files for each ROS topic in a folder with the subject number.

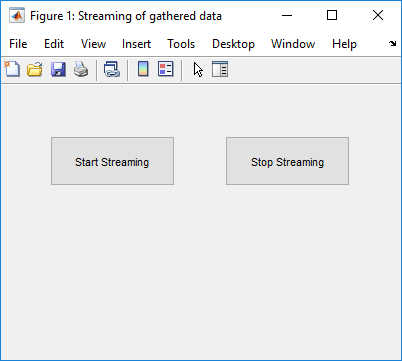
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Figure : GUI for the subscriber

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Automatisch generierte Beschreibung

Figure : Final text displayed in the subscriber