20210408

* The serial buffer is defined in core head file '\\....\Arduino\hardware\Arduino\_STM32\STM32F1\system\libmaple\include\libmaple\usart.h'.
* There may occurs data overflow in MCU receive buffer if high-level control frequency does not match the low-level control frequency as no buffer clear program is written for MCU

20210409

* When high-level controller is stopped with timer object delete in PC high-level controller, a stop command will be sent to MCU for low-level controller, but no guarantee measurement has be made that MCU can correctly receive this command
* Potential measurement-Make sure the main program only stop when info package feedback turn to resume to a safe operation point

20210410

* Caution that before applying the control program, each sensor should be calibrated first
* IMU, load cell, spring stiffness, motor actuation unit parameter, system parameter
* IMU operation algorithm: 6 axis/9 axis
* To adjust sensor feedback item for control, both ADC config and sensor feedback info prcessing program should be adjusted simultaneously to make sure it is obtained correctly with correct command
* ADC enable channel
* ADC detected channel
* IMU operation algorithm (6/9axis)
* Sensor feedback direction (+/- sign is coincides with controller definition or not)
* Sensor feedback processing items in sensorFeedbackPro()
* To increase main-loop running speed, Enabled ADC channel can be adjusted.
* Adjust of ENABLED\_CH & *i* in getADC() and
* Adjust of ENABLED\_CH & *i* & *t* in getADCaverage()
* Before running the program, the motor actuation parameter and rotation direction need to be calibrated
* Motor rotation direction
* Actuation unit parameters:
* Motor current constant, motor driver configuration, gear box
* Pulley radius
* Spring stiffness
* For the Motor enable/disable logic: the motor enable pin is disabled after initialization in MCU program 🡪 will be enabled when the 'mode' flag received from PC indicates normal operation 🡪 will be disable again if ‘mode’ flag indicates stop status
* The stop condition of high-level controller need to be adjusted as practical application required
* For testing: time condition may be enough
* For practical application: At present, the condition can be time condition + mode status condition

20210415

* Yaw angle return to zero logic
* Need to be updated with practical user intention detection strategy
* Timer set in MATLAB Prog
* ‘BusyMode’ : ‘queue’ or ‘drop’
* Frequency adjustment for highest communication frequency
* Serial port set in MATLAB Prog
* Terminator
* BaudRate
* Com port name

202010416

* At present the test bench version program only contains parameters of actuation unit and partial sensors of one side torque transmission system, parameter of another side torque transmission system needs to be added.

20210417

* The moving average/exponential filter need to be adjusted for target ADC feedback processing
* Check if the communication protocol is coincided to communication program set up like: terminator, SendItemFlag set up.