Week(2) | Demo | Self-Balancing Sub-Team

- Second week starting from the 17th till the 23rd of October was basically writing demo codes for the self-balancing robot.
- It started with understanding the PID v2 library by Brett Beauregard line by line through his blog posts (you can find the links for both the library and blog down below).
- Second was getting a deeper understanding of the MPU6050 sensor through its datasheet.
- Codes are done yet not tested as the physical body isn't fabricated yet.
- During our meeting at the end of the week on the 23rd of October we settled on starting parallel work; fabrication for the self-balancing robot while simulation is still being done, as well as working on simulation for the robotic arm robot without any fabrication yet.
- Codes to be tested after fabrication during the upcoming week; week(3).
- Writing codes isn't the easiest thing so far; trying to get a deeper understanding of sensors, PID algorithm, filters to combine MPU6050 readings, getting a smooth logical code flow/output for the robot…etc.
- Demo Codes done so far:
    - Main.ino
    - App.h | App.cpp
    - motors.h | motors.cpp
    - mpu6050.h | mpu6050.cpp
    - ultrasonic.h | ultrasonic.cpp
- Following clean coding criteria as much as possible/learned; files' structure and comments.

Resources:

1) PIDv2 library: https://github.com/imax9000/Arduino-PID-Library
2) Brett's blog posts: http://brettbeauregard.com/blog/2011/04/improving-the-beginners-pid-introduction/
3) Useful resource for getting a sense of PID control: https://www.youtube.com/channel/UC923b-omXUs0dnWOTDD7FhA/videos
4) MPU6050 datasheet "just getting a sense of it": https://invensense.tdk.com/wp-content/uploads/2015/02/MPU-6000-Datasheet1.pdf