CC3501 weekly report template

**Group number:** 2 **Team members:** Ethan Waters, Lachlan Pryce, Stuart Beattie  
**Week number:** 1 – 5

**Progress this week**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Task** | **Who did it?** | **What were the outcomes?** | **Who did the peer review?** | **What did you learn?** |
| Develop Python script capable of moving robot arm | Ethan | Robotic arm can move based on PyNiyro library with hard coded python script | Lachlan & Stuart | Arm can move |
| Setup server client with datagram socket connection to get data (input for robotic arm movements) from different clients. Created automated testing / reset scripts to executed by a client and sent data over socket | Ethan | Robotic arm can move based on commands from client. Can be multiple clients | Lachlan & Stuart | Arm can move based on data mimicking the format that is expected output from embedded system |
| Setup Git and Onedrive | Ethan | Setup Git and Onedrive | Lachlan & Stuart |  |
| Setup microcontroller with ESP32 chip and integrate with MPU-9050 | Ethan | Can receive data from sensor | Lachlan & Stuart | Arduino IDE is terrible, will complete proper software setup with vscode in future. Sensor error apparent |
| Implement CAN bus controller, transceiver and supporting circuit in schematic. | Ethan |  | Lachlan |  |
| Brief testing and investigation of Kalman filter example code | Ethan | Yet to correctly implement | Lachlan | Theory of Kalman filters |
| Test MPU6050 breakout with ESP8266 | Lachlan | Data received from sensor. | Stuart | Drift error became prevalent.  Sensor sampling rate may not be sufficient with I2C. |
| Investigate other potential IMU’s | Lachlan | Selected LSM9DS1 9 DoF sensor. | Ethan & Stuart | 9 ‘DoF’ sensor may provide better accuracy with sensor fusion. |
| Review LSM9DS1 datasheet. Begin detailed design implementation of sensor into Altium schematic. | Lachlan | Sensor schematic 95% complete. Pending peer review. |  | STMicroelectronics datasheets aren’t entirely comprehensive. |
| Brief research into Kalman filters | Lachlan | Options depending on processing capability: - Kalman - Mahony  - Madgwick algorithms |  | Kalman filter additional processing has the potential to introduce response delays. Additional methods of sensor fusion are available, however, at the cost of accuracy. |
| Implement flex/pressure sensors with ESP32. | Stuart | Range of voltage readouts that could be used as a threshold for claw/hand ‘open and close’ | Lachlan | Some flex sensors are great, others not so much. Pressure sensor gave the most reliable results. |

**Overall project tracking:** [fill this in at the beginning of the project and update weekly based on actual progress]

|  |  |
| --- | --- |
| **Week number** | **Milestones** |
| 1 | Confirm project topic and begin |
| 2 |  |
| 3 | Arm can move with an input from a socket. The input is an automated test script executed by a client to mimic the embedded system output |
| 4 |  |
| 5 | Complete 50% schematic draft. |
| 6 | Begin PCB Draft. Complete Schematic, show Bronson. |
| 7 | Submit Design for manufacturing. Complete implementation of Kalman filter on test microcontroller and IMU to observe difference and work with data. |
| 8 | Work on vision based movement while waiting for hardware. |
| 9 |  |
| LR |  |
| 10 |  |
| 11 |  |
| 12 |  |
| 13 | Demo day during Friday lab |