|  |  |
| --- | --- |
| Project Name: | MailBird: An Autonomous Delivery System |
| Team #, Members: | Team 1, Ben Smith, Hugh Dillon, Hunter Thorington, Rick Holloway, Zac Hawkins |
| Report Date: | February 26, 2014 |
| Project Description: | A landing system that can guide a vehicle using IR LEDs within 1 inch of a target. |
| Cycle (1, or 2): | Cycle 1 |
| Cycle Intent: | Build a working prototype of IR module and use to mimic loiter behavior over LED station |

**TASKS**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | Planned |  |  | Actual |  |
| Task # | Task Description (Add rows as needed) | Cycle planned for completion | Total planned hours | Planned hours this cycle | Status (% complete) | Actual hours this cycle | Total hours |
|
|
| 1 | Team management | 2 | 60 | 30 | 26.67% | 8 | 8 |
| 2 | IR land control method | 1 | 120 | 120 | 47.08% | 56.5 | 56.5 |
| 3 | IR camera implementation | 1 | 40 | 40 | 162.50% | 65 | 65 |
| 4 | Ground Station control method | 1 | 40 | 40 | 65.00% | 26 | 26 |
| 5 | Landing station | 2 | 20 | 10 | 10.00% | 1 | 1 |
| 6 | Reports | 2 | 180 | 80 | 13.75% | 11 | 11 |
| 7 | Marketing display | 2 | 40 | 0 | 0.00% | 0 | 0 |
| 8 | Integration of components | 1 | 100 | 100 | 107.00% | 107 | 107 |
|  |  | **Planned Total** | 600 | 420 | **Actual Total** | 274.5 | 274.5 |

1Planned Total should equal (# of team members) x (10 hrs. per week) x (Cycle 1 weeks 6) + Cycle 2 weeks (6) = 12 weeks).

2Assumes 5 hours per week for 12 weeks. Should be mainly team leader(s).

**TEAM MEMBER HOURS**

**Record # of hours each person spent on each task this week, then total by week, cycle, and project.**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **Task3** |  |  |  |  |  | **Total Hours** |  |
| **Name** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **Week** | **Cycle** | **Project** |
| **Dillon, Hugh** | **2** | **--** | **5** | **--** | **--** | **--** | **--** | **15** | **22** | **64.5** | **64.5** |
| **Hawkins, Zac** | **--** | **--** | **4** | **--** | **--** | **--** | **--** | **5.5** | **9.5** | **41** | **41** |
| **Holloway, Rick** | **--** | **--** | **13** | **--** | **--** | **1.5** | **--** | **15** | **29.5** | **73.5** | **73.5** |
| **Smith, Ben** | **--** | **--** | **--** | **--** | **--** | **1** | **--** | **7** | **8** | **40.5** | **40.5** |
| **Thorington, Hunter** | **--** | **--** | **8** | **--** | **--** | **--** | **--** | **2** | **10** | **55** | **55** |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **TOTALS** | **2** | **0** | **30** | **0** | **0** | **2.5** | **0** | **44.5** | **79** | **274.5** | **274.5** |

**Accomplishments since last status report:**

* The quadcopter will arm and the new flight mode is working to an elementary degree. We still have a lot of bugs to work out but the preliminary phase of integrating the camera sensor into the ArduPilot code is complete.
* We can see that the flight controller is getting error correctly

**Obstacles encountered since last status report and actions to deal with same:**

* When integrating the camera sensor into the ArduPilot software, we simply changed the error input into the flight controller when we’re in our new flight mode. The idea seems to be valid, but the camera error is incredibly sporadic. We’ve formatted the error correctly (cm) but we think the viewing angle of the camera is causing the error to change very rapidly. This is causing the quadcopter to make drastic adjustments when the error source is the IR camera. To counteract this, we’ve ordered some lenses to try on the IR camera to increase the viewing angle from 35 degrees to somewhere around 160. Hopefully that will slow our error down, and if not, we will have to adjust the PID gains to make an IR camera-specific controller.

**Risks facing the project and actions to deal with same:**

* As we said last week, we’re doing a significant code addition. We’re using the best software tools we know to maintain the modified Arducopter codebase. Code checkout and change lists are a good way to mitigate the risk of a lot of wasted time editing code and fixing code that used to work.
* After modifying the flight code, there may be potential for unbounded behavior from the quadcopter while it’s in the air. It seems that the RC controller is still valid for switching modes, so as long as we test in a wide space, we should be able to get the quadcopter back to the ground (in some fashion – crashes are not ideal but at least you still have something to fix).
* Designing good tests that actually prove something is difficult. We’re writing down exactly what data we’re taking and how we plan to prove functionality as we add these tests.

**Objectives for the next week:**

* Begin planning for Cycle 2
* Receive a variety of small, wide-angle cameras to test the effects on the error reporting from the IR camera.
* Complete documents required at the conclusion of Cycle 1, which is in 1 week.