EE CprE 491 – Fall 2019
MicroCART Senior Design Team
Weekly Report 10

Dec 2nd - Dec 9th
Faculty Advisors: Phillip Jones, Matt Cauwels, James Talbert

Team Members:

Evan Blough -- Technical Team Lead, Embedded Software Lead
Kynara Fernandes -- Ground Control Station Lead
Aaron Szeto -- Controls Lead
Joe Gamble -- Embedded Hardware Lead
Shubham Sharma -- Crazy Fly Implementation Lead, Website Manager
Jacob Brown -- Physical Hardware Lead

Summary for Progress this Week

This week we tested the new GCS slider feature. It has somewhat working functionality. We finished testing hardware driver modules on drone like RC and Lidar. We worked on the final draft of the design document and slides for our presentation on friday.

Past Week Accomplishments

- Placed new frames on crazyflies - Joe
- Confirmed Data tool works with 2019 log file-Aaron
- The Slider bars widget was able to set PID constants on drone consistently. - Kynara
- Lidar measurement issue seems resolved the average error on measurements was around 5-6 cm - Evan
- Attempted to do autonomous flight test for takeoff script, but the results were unsuccessful, will have to examine the log files to determine the exact cause. - Evan/Joe
- Resolved most of the crazyflie issues. I moved to a fresh VM, installed and configured all the necessary modules

Pending Issues

- Modifying network configuration to support multiple drone
- Figuring out methods to debug flight performance.
- Figuring out the network adapter situation for the VM. One network adapter is connected to the host machines wifi, need to create a new adapter connected to the Optitrack camera system.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours

Evan Blough	I tested Kynara's GCS widget. I tried to do an autonomous flight test, but it was unsuccessful. I worked on the design document and presentation slides. I finished running the hardware driver tests and everything seemed to be functioning properly.	7	91
Kynara Fernandes	Implemented decimal slider bar, functionality is there but layout needs to be adjusted. Tested that correct values were sent	3	73.5
Joe Gamble	Attempted flight test with Evan. Removed all broken frames on crazyflies and replaced with new ones.	4	71
Jacob Brown			48
Aaron Szeto	Confirmed 2019 log works. Looking into control algorithm. Worked on Design Document	3	59
Shubham Sharma	Resolved most of the crazyflie issues. I moved to a fresh VM, installed and configured all the necessary modules	10	67

Plans for Coming Week

- Get drone to fly autonomously before we leave for break.
- Research how to implement multiple vehicle connections on backend
- Collaborate with controls to view flight data from failed autonomous flight
- Write documentation for the usage of the new MicroCART VM.

Appendix:

RC Test Measurements

		Min	Max
	Channel 1	0.698	0.9212
	Channel 2	0.297	0.704
	Channel 3	0.293	0.911
	Channel 4	0.2916	0.701
		Kill	On
Kill	Channel 5	0.18	0.71
		Auto	Manual
Mode	Channel 6	0.077	0.92

Screenshot of set_param() called in quad software to update the computation graph. Used for evaluating functionality of new GCS feature.


```
        graph->n_nodes += 1;
        setBit(graph->node_existence, id);
        // Reset block upon creation
        if (new_node->type->reset != NULL) {
            new_node->type->reset(new_node->state);
        }
        return id;
    }
}

int graph_set_param_val(struct computation_graph *graph, int node_id, int param_id, double value) {
    if (!graph_node_exists(graph, node_id) || param_id >=
        return -1;
    }
    graph->nodes[node_id].param_values[param_id] = value;
    graph->nodes[node_id].updated = 1;
    return 0;
}

double graph_get_param_val(const struct computation_graph
    if (!graph_node_exists(graph, node_id) || param_id >=
        return NAN;
    }
    return graph->nodes[node_id].param_values[param_id];
}

double graph_get_output(const struct computation_graph *graph, int node_id, int output_id) {
    if (!graph_node_exists(graph, node_id) || output_id >= graph->nodes[node_id].type->n_outputs) {
        return NAN;
    }
    return graph->nodes[node_id].output_values[output_id];
}

/*
 * Assumptions: The node passed in is a valid ID (should be checked before passing)
```

Name	Type	Value
value	double	35.00000000000000

```
35.00000000000000
Hex: 4041800000000000, Dec: 35.00000000000000, Oct: 0401014000000000000000
Bin: 0100,0000,0100,0001,1000,0000,0000,0000,0000,0000,0000,0000,0000,000
Size: 8 bytes, Type: double
Address: 0x332550
```

ne 16

0

ne 30

Console   Tasks   SDK Terminal   Problems

TCF Debug Virtual Terminal - ARM Cortex-A9 MPCore #1

SDK Log   Memory   Search   Progress

Mon
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