Progress Review 1

Team F

Status

- We have not managed to move or control the Husky through the onboard PC
- We have managed to perform takeoff, landing, and simple movements on the Bebop 2 through ROS on a laptop

Husky progress and challenges

- We have asked Tim to help us with moving the Husky
- We have reinstalled the onboard computer image
- We have tried sending messages directly to the Husky Node, bypassing the twist_mux and teleop controllers
- We have contacted Clearpath for advice on how to debug
- We have looked at the diagnostic node
- We are asking Dimi if we can use his Husky at NREC instead
- We will move either Husky by the next PR

```
^Cadministrator@teamf:~$ sudo tailf /var/log/upstart/husky-core.log
process[diagnostic_aggregator-10]: started with pid [6920]
Unable to open /dev/prolific
EXCEPTION: TransportException 2: Failed to open serial port
terminate called after throwing an instance of 'clearpath::TransportException*'
[ INFO] [1508439988.261199057]: [twist_marker_server] Initialized.
[husky_node-3] process has died [pid 6879, exit code -6, cmd /opt/ros/indigo/lib/husky_base/husky_node __name:=husky_node __log:=/tmp/7da9eb4e-b500-11e7-b23c-00012e4ea836/husky_node-3.log].
log file: /tmp/7da9eb4e-b500-11e7-b23c-00012e4ea836/husky_node-3*.log
[WARN] [WallTime: 1508440018.839860] Controller Spawner couldn't find the expected controller_manager ROS interface.
[base_controller_spawner-4] process has finished cleanly
log file: /tmp/7da9eb4e-b500-11e7-b23c-00012e4ea836/base_controller_spawner-4*.log
logger: husky-core: Using workspace setup file /etc/ros/setup.bash
logger: husky-core: Launching ROS_HOSTNAME=teamf, ROS_IP=, ROS_MASTER_URI=http://127.0.0.1:11311, ROS_LOG_DIR=/tmp
ls: cannot access /etc/ros/indigo/husky-core.d/*.xacro: No such file or directory
logger: husky-core: Generated launchfile: /tmp/husky-core.launch
logger: husky-core: Started roslaunch as background process, PID 7456, ROS_LOG_DIR=/tmp
... logging to /tmp/7da9eb4e-b500-11e7-b23c-00012e4ea836/roslaunch-teamf-7456.log
Checking log directory for disk usage. This may take awhile.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://teamf:47538/

SUMMARY
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PARAMETERS
 * /diagnostic_aggregator/analyzers/husky/expected: ['husky_base: pow...
 * /diagnostic_aggregator/analyzers/husky/find_and_remove_prefix: husky_base:
 * /diagnostic_aggregator/analyzers/husky/path: Husky A200
 * /diagnostic_aggregator/analyzers/husky/timeout: 5.0
 * /diagnostic_aggregator/analyzers/husky/type: diagnostic_aggreg...
 * /ekf_localization/base_link_frame: base_link
 * /ekf_localization/frequency: 50
 * /ekf_localization/imu0: imu/data
 * /ekf_localization/imu0_config: [False, False, Fa...
 * /ekf_localization/imu0_differential: True
 * /ekf_localization/imu0_queue_size: 10
 * /ekf_localization/imu0_remove_gravitational_acceleration: True
 * /ekf_localization/odom0: husky_velocity_co...
 * /ekf_localization/odom0_config: [False, False, Fa...
 * /ekf_localization/odom0_differential: False
 * /ekf_localization/odom0_queue_size: 10
 * /ekf_localization/odom_frame: odom
 * /ekf_localization/two_d_mode: True
 * /ekf_localization/world_frame: odom
 * /husky_joint_publisher/publish_rate: 50
 * /husky_joint_publisher/type: joint_state_contr...
 * /husky_node/control_frequency: 10.0
 * /husky_node/diagnostic_frequency: 1.0
 * /husky_node/max_acceleration: 3.0
 * /husky_node/max_speed: 1.0
 * /husky_node/polling_timeout: 10.0
 * /husky_node/port: /dev/prolific
 * /husky_node/wheel_diameter: 0.3555
 * /husky_velocity_controller/angular/z/has_acceleration_limits: True
 * /husky_velocity_controller/angular/z/has_velocity_limits: True
```

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 * /husky_velocity_controller/angular/z/max_acceleration: 6.0
 * /husky_velocity_controller/angular/z/max_velocity: 2.0
 * /husky_velocity_controller/base_frame_id: base_link
 * /husky_velocity_controller/cmd_vel_timeout: 0.25
 * /husky_velocity_controller/enable_odom_tf: False
 * /husky_velocity_controller/estimate_velocity_from_position: False
 * /husky_velocity_controller/left_wheel: ['front_left_whee...
 * /husky_velocity_controller/linear/x/has_acceleration_limits: True
 * /husky_velocity_controller/linear/x/has_velocity_limits: True
 * /husky_velocity_controller/linear/x/max_acceleration: 3.0
 * /husky_velocity_controller/linear/x/max_velocity: 1.0
 * /husky_velocity_controller/pose_covariance_diagonal: [0.001, 0.001, 0....
 * /husky_velocity_controller/publish_rate: 50
 * /husky_velocity_controller/right_wheel: ['front_right_whe...
 * /husky_velocity_controller/twist_covariance_diagonal: [0.001, 0.001, 0....
 * /husky_velocity_controller/type: diff_drive_contro...
 * /husky_velocity_controller/wheel_radius_multiplier: 1.0
 * /husky_velocity_controller/wheel_separation_multiplier: 1.875
 * /joy_teleop/joy_node/autorepeat_rate: 20
 * /joy_teleop/joy_node/deadzone: 0.1
 * /joy_teleop/joy_node/dev: /dev/input/js0
 * /joy_teleop/teleop_twist_joy/axis_angular: 0
 * /joy_teleop/teleop_twist_joy/axis_linear: 1
 * /joy_teleop/teleop_twist_joy/enable_button: 0
 * /joy_teleop/teleop_twist_joy/enable_turbo_button: 2
 * /joy_teleop/teleop_twist_joy/scale_angular: 0.6
 * /joy_teleop/teleop_twist_joy/scale_angular_turbo: 1.2
 * /joy_teleop/teleop_twist_joy/scale_linear: 0.4
 * /joy_teleop/teleop_twist_joy/scale_linear_turbo: 1.0
 * /robot_description: <?xml version="1....
 * /rosdistro: indigo
 * /rosversion: 1.11.21
 * /twist_mux/locks: [{'topic': 'e_sto...
 * /twist_mux/topics: [{'topic': 'joy_t...

NODES
  /joy_teleop/
    joy_node (joy/joy_node)
    teleop_twist_joy (teleop_twist_joy/teleop_node)
  /
    base_controller_spawner (controller_manager/spawner)
    diagnostic_aggregator (diagnostic_aggregator/aggregator_node)
    ekf_localization (robot_localization/ekf_localization_node)
    husky_node (husky_base/husky_node)
    robot_state_publisher (robot_state_publisher/robot_state_publisher)
    twist_marker_server (interactive_marker_twist_server/marker_server)
    twist_mux (twist_mux/twist_mux)

auto-starting new master
process[master]: started with pid [7474]
ROS_MASTER_URI=http://127.0.0.1:11311

setting /run_id to 7da9eb4e-b500-11e7-b23c-00012e4ea836
process[rosout-1]: started with pid [7487]
started core service [/rosout]
process[robot_state_publisher-2]: started with pid [7504]
process[husky_node-3]: started with pid [7505]
process[base_controller_spawner-4]: started with pid [7506]
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process[ekf_localization-5]: started with pid [7512]
process[twist_marker_server-6]: started with pid [7521]
process[twist_mux-7]: started with pid [7535]
process[joy_teleop/joy_node-8]: started with pid [7539]
process[joy_teleop/teleop_twist_joy-9]: started with pid [7542]
process[diagnostic_aggregator-10]: started with pid [7550]
Unable to open /dev/prolific
EXCEPTION: TransportException 2: Failed to open serial port
terminate called after throwing an instance of 'clearpath::TransportException*'
[ INFO] [1508440047.476042436]: [twist_marker_server] Initialized.
```

```
      -
        level: 2
        name: ekf_localization: odometry/filtered topic status
        message: No events recorded.
        hardware_id: none
        values:
          -
            key: Events in window
            value: 0
          -
            key: Events since startup
            value: 0
          -
            key: Duration of window (s)
            value: 10.159997
          -
            key: Actual frequency (Hz)
            value: 0.000000
          -
            key: Minimum acceptable frequency (Hz)
            value: 43.200000
          -
            key: Maximum acceptable frequency (Hz)
            value: 57.200000
---
header:
  seq: 1193
  stamp:
    secs: 1508439825
    nsecs: 997538144
  frame_id: ''
status:
  -
    level: 0
    name: joy_teleop/joy_node: Joystick Driver Status
    message: OK
    hardware_id: none
    values:
      -
        key: topic
        value: /joy_teleop/joy
      -
        key: device
        value: /dev/input/js0
      -
        key: dead zone
        value: 0.1
      -
        key: autorepeat rate (Hz)
        value: 20
      -
        key: coalesce interval (s)
        value: 0.001
      -
        key: recent joystick event rate (Hz)
        value: 8.73048
      -
        key: recent publication rate (Hz)
        value: 25.2214
      -
        key: subscribers
        value: 2
---
```

```
header:
  seq: 22824
  stamp:
    secs: 1508439826
    nsecs: 417860507
  frame_id: ''
axes: [-0.0, -0.0, 1.0, -0.0, -0.0, 1.0, 1.0, 1.0]
buttons: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
---
header:
  seq: 22825
  stamp:
    secs: 1508439826
    nsecs: 417860507
  frame_id: ''
axes: [-0.0, -0.0, 1.0, -0.0, -0.0, 1.0, 1.0, 1.0]
buttons: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
---
header:
  seq: 22826
  stamp:
    secs: 1508439826
    nsecs: 469803774
  frame_id: ''
axes: [-0.0, -0.0, 1.0, -0.0, -0.0, 1.0, -0.0, 1.0]
buttons: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
---
header:
  seq: 22827
  stamp:
    secs: 1508439826
    nsecs: 469803774
  frame_id: ''
axes: [-0.0, -0.0, 1.0, -0.0, -0.0, 1.0, -0.0, 1.0]
buttons: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
---
header:
  seq: 22828
  stamp:
    secs: 1508439826
    nsecs: 469803774
  frame_id: ''
axes: [-0.0, -0.0, 1.0, -0.0, -0.0, 1.0, -0.0, 1.0]
buttons: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
---
header:
  seq: 22829
  stamp:
    secs: 1508439826
    nsecs: 469803774
  frame_id: ''
axes: [-0.0, -0.0, 1.0, -0.0, -0.0, 1.0, -0.0, 1.0]
buttons: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
---
header:
  seq: 22830
  stamp:
    secs: 1508439826
    nsecs: 621800563
  frame_id: ''
axes: [-0.0, -0.0, 1.0, -0.0, -0.0, 1.0, -0.0, -0.0]
buttons: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
---
```

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        - 
          key: Lockout                                    capacity_estimate: 480
          value: False                                    charge_estimate: 0.64
        -                                                 timeout: False
          key: Emergency Stop                             lockout: False
          value: False                                    e_stop: False
        -                                                 ros_pause: False
          key: ROS Pause                                  no_battery: False
          value: False                                    current_limit: False
        -                                               ---
          key: No battery                                 header:
          value: False                                      seq: 35
        -                                                   stamp:
          key: Current limit                                  secs: 1508440506
          value: False                                        nsecs: 986557600
    -                                                       frame_id: ''
      level: 0                                            uptime: 2722203
      name: husky_node: software_status                  ros_control_loop_freq: 9.93412502879
      message: Software OK                               mcu_and_user_port_current: 0.2
      hardware_id: Husky A200-123                        left_driver_current: 0.0
      values:                                            right_driver_current: 0.0
        -                                                 battery_voltage: 25.28
          key: ROS Control Loop Frequency                left_driver_voltage: 0.0
          value: 9.93774                                 right_driver_voltage: 0.0
---                                                       left_driver_temp: 0.0
header:                                                   right_driver_temp: 0.0
  seq: 38                                                 left_motor_temp: 0.0
  stamp:                                                  right_motor_temp: 0.0
    secs: 1508440508                                      capacity_estimate: 480
    nsecs: 419391099                                      charge_estimate: 0.62
  frame_id: ''                                            timeout: False
status:                                                   lockout: False
  -                                                       e_stop: False
    level: 0                                              ros_pause: False
    name: ekf_localization: Filter diagnostic updater    no_battery: False
    message: The robot_localization state estimation node appears to be functioning properly.    current_limit: False
    hardware_id: none                                   ---
    values: []                                           header:
  -                                                         seq: 36
    level: 0                                                stamp:
    name: ekf_localization: odometry/filtered topic status    secs: 1508440507
    message: ''                                              nsecs: 976635689
    hardware_id: none                                      frame_id: ''
    values:                                              uptime: 2723204
      -                                                   ros_control_loop_freq: 9.9377363057
        key: Events in window                             mcu_and_user_port_current: 0.08
        value: 507                                        left_driver_current: 0.0
      -                                                   right_driver_current: 0.0
        key: Events since startup                         battery_voltage: 25.25
        value: 1830                                       left_driver_voltage: 0.0
      -                                                   right_driver_voltage: 0.0
        key: Duration of window (s)                       left_driver_temp: 0.0
        value: 10.139954                                  right_driver_temp: 0.0
      -                                                   left_motor_temp: 0.0
        key: Actual frequency (Hz)                        right_motor_temp: 0.0
        value: 50.000225                                  capacity_estimate: 480
      -                                                   charge_estimate: 0.64
        key: Minimum acceptable frequency (Hz)            timeout: False
        value: 43.200000                                  lockout: False
      -                                                   e_stop: False
        key: Maximum acceptable frequency (Hz)            ros_pause: False
        value: 57.200000                                  no_battery: False
---                                                       current_limit: False
                                                        ---
```
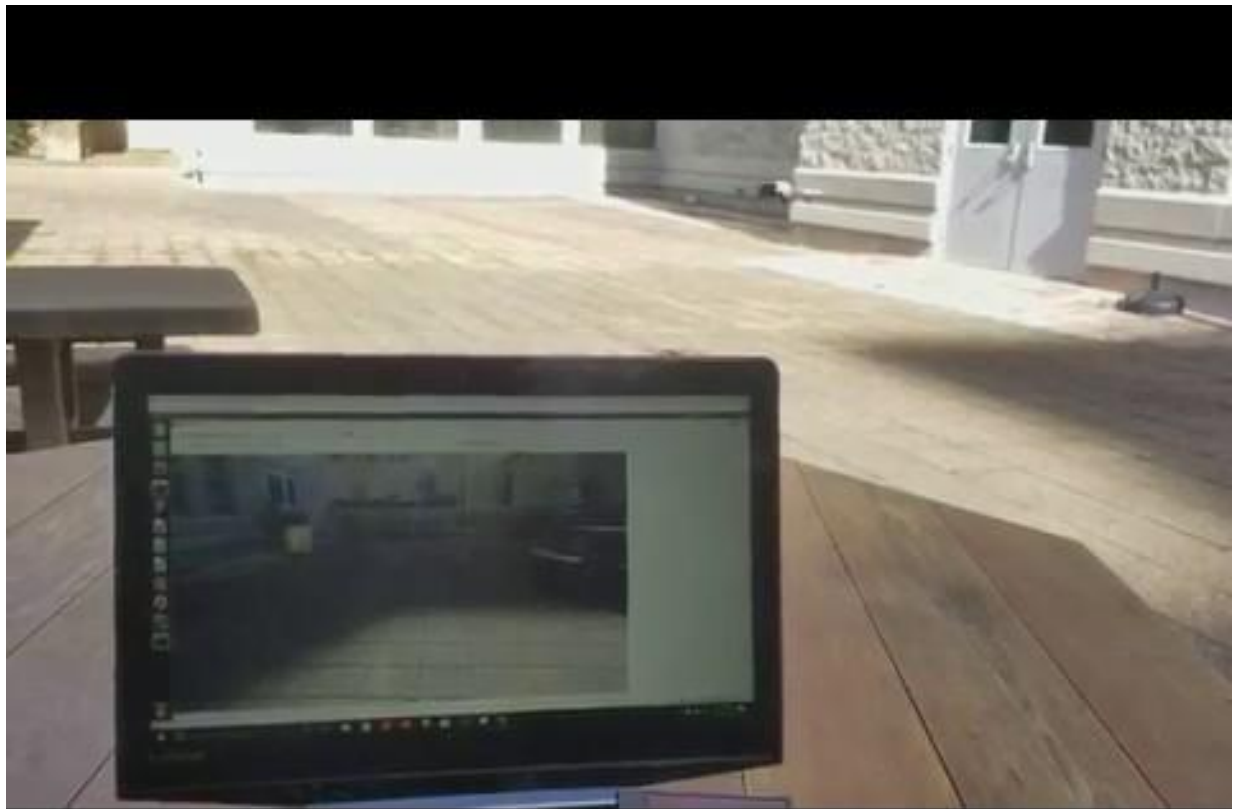
Bebop 2 progress and challenges

- We have received the Bebop 2 Drone from Katia a week ago
- We have flown the drone outside to determine its stability, range of operation, and general capabilities
- We have used the SDK to take off, land, maneuver, and stream video back from the drone
- We have used a ROS node to control the drone
- We will implement higher level controls and move the drone from one location to another with GPS commands

Thank You!