Testing and analysis

PX4 SITL testing with ROS/Gazebo
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Content

- Story
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- The Real Flight
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Story
Story

- Offboard control
- Vertical takeoff to 10 meter AGL
- Loiter

> Python script
Continuous Integration

How it works:

- CI Job
- Docker Container
  - rostest
    - PX4 SITL (Gazebo)
    - Test (rospy / roscpp)
- Results
Feedback

Test Result: __main__

0 failures (±0)

4 tests (±0)
Took 1 min 27 sec.

All Tests

<table>
<thead>
<tr>
<th>Class</th>
<th>Duration</th>
<th>Fail</th>
<th>(diff)</th>
<th>Skip</th>
<th>(diff)</th>
<th>Pass</th>
<th>(diff)</th>
<th>Total</th>
<th>(diff)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DirectOffboardPosctlTest</td>
<td>31 sec</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
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<tr>
<td>ManualInputTest</td>
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<td>0</td>
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<tr>
<td>MavrosOffboardAttctlTest</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>MavrosOffboardPosctlTest</td>
<td>29 sec</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Feedback

- rosbag
- Exported plots, examples:
  - Test 1
  - CI test
Limitations

Headless execution:
- everything except OpenGL/GLX
The Real Flight
The Real Flight

tuning?

controller issue?

GPS noise?

bad day?
Reproducibility
Reproducibility

- Fix for the real flight: use current heading in the setpoint
Reproducibility
Conclusion

- Comparable results for real and simulated flights
Conclusion

● Testing high-level functionality
● Regression testing
● Fast prototyping of complex use-cases
More Information

http://px4.io (search for "sitl")

Presentation content and example code:
https://github.com/UAVenture/px4_sitl_ci_dronencode_talk
Thanks

- Thomas Gubler
- PX4 community
- ASL ETH Zürich