

# Reviewer Response Letter

Manuscript #RSI22-AR-02455R:

*The yaq Project: Standardized Software Enabling Flexible Instrumentation*

## Reviewer #1

### References

*As a reviewer, it is disappointing that the references are question marks in the marked-up version of the resubmission.*

Our apologies, this has been fixed.

### Spelling of .busy()

*It's unclear why .is\_busy becomes .busy in the raster example (1.2).*

Thank you for catching that! The spelling is “busy”, not “is\_busy”. This has been fixed.

### Loop nesting detail

*Also, in example 1.2 it is surprising that the outer loop motor is moved every time through the script (even though most of those commands will direct the motor to the same place).*

You're exactly correct. Putting `motor1.set_position` in the inner loop causes the same message to be sent over the network again and again unnecessarily. Practically, we get away with this mistake because network traffic is almost always fast compared to motor motion. We've changed the example to put `motor1.set_position` outside of the inner loop.

## Blocking

*The authors should clarify why requiring high-level scripts to implement "blocking" [while motor.is\_busy(): time.sleep(0.001)] is a good design choice. Might experimenters forget to wait for motor completion and cause misalignment in data?*

From our perspective, offering the busy message gives users the flexibility to implement blocking how experimenters wish. Sometimes each peripheral needs to block before the next operation. Sometimes groups of peripherals can move together, and block until all have arrived. Sometimes peripherals don't need to block at all. Users can implement any of these patterns by choosing how to invoke the busy message in their script.

Yes, users might forget to wait. This is a trade-off between flexibility and safety, and we've chosen flexibility here. So far we haven't seen too much confusion about when to block---in fact many users are too cautious and could speed up their experiments by removing unnecessary blocking.

Your question has inspired us to add another section to the SI: "Non-Blocking Script". Here we give an example where one of the peripherals is non-blocking in the experiment. We think it strengthens the understanding, especially when contrasted with the existing raster script. Thanks for the idea!

## SI typos

*The supplementary information needs a second read-through for typos. There is a missing word near the bottom of S9: "This has not yet been implemented for , and would require clients to have knowledge of how to retrieve and display the images collected, but there is nothing preventing this if throughput is a limitation." In the references, ref [3] reads "ACcessed".*

Thanks for catching these typos, we've fixed them.

# Reviewer #2

## meaning of “yaq”

*The word Yaq appears everywhere (even in the title) but is nowhere explained. I guess it doesn't mean the tibetan bull...*

Good question! We’ve added a short answer (yaq stands for “Yet Another acQquisition”) to the manuscript and a long, gratuitous answer to the SI.

## Open source landscape

*There is still no real comparison with advantages/disadvantages with existing solutions. I think the readers interested in such a paper would like to have comparative clues as to what to use that would best solve their issues especially because many things exists in the open source ecosystem.*

We agree that readers would be interested in more comparative work. We’re at a point now where there are a lot of similar options and choosing a framework or library to build on top of is challenging. We hope that this paper has done a good-enough job describing the concepts that really matter to us. These concepts should help inform readers as they compare other projects with yaq for their application.

We’ve added a statement to the introduction: More work needs to be done to catalog, compare, and contrast the large number of open-source projects that now exist. We think there is a great opportunity for future work here.

## References

*Last remarks concerns references that no more appears in the resubmitted manuscript. Impossible for me to check if all refs are now reachable. This is part of my job as reviewer and citations are especially important but here I cannot do it... This troubles me to the point I would like to see another version of the paper before going further into publication.*

Our apologies, this has been fixed.