Answer to Reviewer 4sFq:

Authors should clearly indicate the contributions of this research in Section I.

I hope to have addressed this point with the changes in the manuscript.

The authors indicated the thrust of the MOAV is 6.4 kg. How to determine this value? If it is the measurement data, the authors should describe the experiment in detail.

I hope to have addressed this point with the changes in the manuscript.

Due to its structural novelty, the MOAV needs to be compared in basic characteristics (such as flight time, flight velocity, control strategy) with similar ones (similar body weight, similar size). Potential application of such kind of drone also should be discussed in this manuscript.

The drone is very much a prototype, used as a platform to test the viability of a few novel ideas, not to compete with fully developed products. As such it’s not fully optimized for characteristics like flight time. I believe however that the derivation of the theoretical efficiency gain compared to other drone geometries is sound. As for the control strategy, I’ve added a test flight for comparison, using the common pseudoinverse method for control allocation. Position control still remains a simple PID controller.

How does the MOAV react to wind load?

Valid question. I haven’t looked into it.

Answer to Reviewer JWf3:

The theoretical basis for simulation in section II and the selection of experimental parameters in section III.B has not been clarified.

I hope to have addressed this point with the changes in the manuscript.

The experiment for slip ring losses is not clearly described.

I’ve swapped out the experiment to make it less convoluted and more closely related to the actual application. The experiment setup is also described more in dept.

It lacks important demonstrations to prove the advantages of having six active actuators.

I believe the calculated efficiency gain across orientations of this arm configuration does show an advantage over the configurations of the other existing drones. An actual demonstration would be very difficult to do.

Additionally, the performance of having slip rings to prevent wire winding does not show.

I’ve added a test flight specifically designed to be impossible to perform with this drone but without the slip-rings.

Why were 5 configurations chosen for simulation? Could we simulate with other proposed symmetrical configurations?

Good point. I’ve added 5 more. The reason for the original 5 was that I didn’t want to go overboard with the length of the text.

Do the outer disturbance and power losses need to be considered as input in the control allocation? Could you clarify this statement?

Yes probably. That could be a topic for future work. For now, I’ve clarified this shortcoming in the text and pointed out that the SQP based control allocation could be well suited to address them.

[Last 4 points]

I hope to have addressed this point with the changes in the manuscript.

Answer to Reviewer WZEs:

Intro: ".. accelerate forward without having to lean forward, or lean forward without having to accelerate." - This sentence is awkward. I wouldnt say a multirotor "leans" forward.

I was thinking of Michael Jackson leaning forward and the subversion of expectations when he doesn’t actually move forward. That sentence is supposed to be a very accessible restatement of the previous one without using difficult words. I couldn’t come up with a better alternative.

Literature review and motivation: (...)

I reworded that part slightly, to make it a bit clearer earlier on what exactly the standout features of the drone are.

I'm not sure I fully understand the definition of X\_2. (...)

Yes, that part was not sufficiently well explained. I’ve added the formula and more details.

[points 4-6 about the slip rings]

That part was somewhat convoluted due to me not having access to a drone thrust measuring stand. I’ve redesigned the entire experiments making everything hopefully clearer. The only regrettable drawback is that now the results are more tightly linked to the specific application.

S.IV: Please clarify that when you mention other algorithms based on pseudo-inverse, would this be applicable to your robot? As you only state that it will not sufffer from the same issue. If there are no drawbacks, why not use that?

While the results demonstrate that the robot works as intended, it does not really show how well it works. For example, you did not explictly compare this control allocation method with other methods and highlight where other methods fall short and yours do better. This doesnt really validate the contribution of the work.

I implemented the commonly used pseudoinverse method and added a test flight showing what the drawbacks are.

[points 7,8,10,11 about spelling]

Thanks. Those corrections are very appreciated and not given for granted.