Review of: "Modelling of Quadcopter for Precision Agriculture and Surveillance Purposes"

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Potential competing interests: No potential competing interests to declare.

The paper describes some aspects of the design of a quadcopter for precision agriculture. Specific comments are listed below:

In the introduction section, the authors refer to “the 7 billion mark” for the global population. According to the UN, the global human population reached 8.0 billion in mid-November 2022 (https://www.un.org/en/global-issues/population).

The acronym UAS is used in the "Advent of Drones in the Agricultural Industry" subsection, but it remains undefined. I suggest using the same acronym adopted at the beginning of the introduction section (UAV). Otherwise, it could be interesting to add a sentence to explain the difference between UAV and UAS.

To improve the state-of-the-art analysis, I suggest adding some quantitative data like flight endurance relative to the adopted technology and payloads.

The sentence "Currently, 90% of crop protection in Japan is performed through the use of drones" seems to be wrong or, at least, the result of misinterpreted data. Moreover, the authors do not provide references.

The introduction does not mention the limitations of drones for agriculture. I suggest adding a subsection to explain this topic.

In section 2.2 Design Model, the paper refers to a 5kg quadcopter frame. This is not coherent with the abstract that presents the development of a 7kg drone. Please explain better this inconsistency.

Figure 4 does not declare the unit of measurement. Even if probably, it is mm, it is better to avoid any misinterpretation.

Section 2.2.1 Mathematical Model presents the position of the inertia frame. Please clarify if the inertia frame is associated with the entire system or with a subsystem of the drone. Moreover, it would be nice to have a graphical representation of the inertia frame on a 3D view of the drone (maybe a simplified one).

There is no standard for the Euler angles definition. The order of the rotation is important also if the rotations are relative to the frame fixed to the moving frame or relative to the fixed frame.

It is not clear why the position vector ξ becomes Σ. Equation (4) is misleading since B is undefined; probably it is an under-script, but it is hard to tell. In my opinion, the modeling part must be entirely revised.

Figure 8 is not functional to the paper. The label states that the Figure shows the simulated trajectory, but no trajectory is shown.

It is not clear how the simulation is performed: what the inputs, outputs, and numerical parameters of the model are. All scientific publications must provide readers the possibility to perform experiments to check the correctness of the results. This is not possible if the descriptions of both the model and the simulation are vague. In my opinion, this part of the paper must be improved.

In my opinion, the paper must be strongly revised even from a structural point of view, changing the order and relationships among sections. For example, how can the presented simulation have as a result the CAD model of the drone?