

## **Aerodynamic Design an UAV with Application on the Spraying Agricola with Method of Genetic Algorithm Optimization**

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**Abstract :** Agriculture in the world falls within the main sources of economic and global needs, so care of crop is extremely important for owners and workers; one of the major causes of loss of product is the pest infection of different types of organisms. We seek to develop a UAV for agricultural spraying at a maximum altitude of 5000 meters above sea level, with a payload of 100 liters of fumigant. For the developing the aerodynamic design of the aircraft is using computational tools such as the "Vortex Lattice Athena" software, "MATLAB", " ANSYS FLUENT", " Xfoil " package among others. Also methods are being used structured programming, exhaustive analysis of optimization methods and search. The results have a very low margin of error, and the multi- objective problems can be helpful for future developments. The program has 10 functions developed in MATLAB, these functions are related to each other to enable the development of design, and all these functions are controlled by the principal code "Master.m".

**Keywords :** aerodynamics design, optimization, algorithm genetic, multi-objective problem, stability, vortex

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