



**PROTOTYPE STRUCTURAL DESIGN FOR VERTICAL TAKE-OFF
AND LANDING (VTOL) AIRCRAFT**

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ABSTRACT

This study aimed to create a prototype structural design specifically suited for Vertical Take-Off and Landing (VTOL) aircraft. It focused on achieving a delicate balance between weight efficiency, structural strength, and aerodynamic performance. The approach involved a thorough examination of existing VTOL designs, employing computational simulations and optimization algorithms to refine the structural layout. By incorporating cutting-edge materials and innovative engineering methods, the aim was to minimize weight while ensuring the aircraft's durability and adherence to safety standards. The findings revealed a substantial improvement in structural efficiency, resulting in reduced weight and enhanced aerodynamic properties compared to traditional VTOL aircraft designs. This research contributed significantly to the progress of VTOL technology, providing valuable insights into the most effective structural configurations that could elevate performance and practicality across various applications, such as urban air mobility and unmanned aerial vehicles.

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