World Academy of Science, Engineering and Technology International Journal of Aerospace and Mechanical Engineering Vol:10, No:04, 2016

Implementation and Modeling of a Quadrotor

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Abstract: In this study, the quad-electrical rotor driven unmanned aerial vehicle system is designed and modeled using fundamental dynamic equations. After that, mechanical, electronical and control system of the air vehicle are designed and implemented. Brushless motor speeds are altered via electronic speed controllers in order to achieve desired controllability. The vehicle's fundamental Euler angles (i.e., roll angle, pitch angle, and yaw angle) are obtained via AHRS sensor. These angles are provided as an input to the control algorithm that run on soft the processor on the electronic card. The vehicle control algorithm is implemented in the electronic card. Controller is designed and improved for each Euler angles. Finally, flight tests have been performed to observe and improve the flight characteristics.

Keywords: quadrotor, UAS applications, control architectures, PID

Conference Title: ICAMAME 2016: International Conference on Aerospace, Mechanical, Automotive and Materials

Engineering

Conference Location : Paris, France **Conference Dates :** April 25-26, 2016