UNIVERSITI TEKNOLOGI MARA

MULTIROTOR UNMANNED AERIAL VEHICLE (UAV) FOR MEDICAL AID KIT DELIVERY

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MSc

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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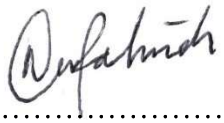
Signature of Student	:	 ……..
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ABSTRACT

Recent Corona Virus Disease 2019 (COVID-19) have subjected many people into quarantine and certain areas undergo lockdown in effort to combat the virus. Minimal human contact and hygiene practices are few ways to reduce the spread of COVID-19. UAV can be deployed as a payload transport to deliver essentials in lockdown or quarantine areas. It can also collect and send medical samples to reduce human to human contact while reducing risk encountered by medical workers. The aim of this research is to develop a semi-automatic multirotor UAV to transport medical supplies to a simulated accident with automatic flight capability within the range and altitude stipulated by the mission requirements and air transport regulations. A desktop and mission study were done to investigate the requirements and regulations regarding the use of semi-automatic multirotor UAV for deployment of medical aid supplies. Then, a semi-automatic multirotor UAV is constructed from commercially available components. The semi-automatic UAV is known as NAMTOR3. Simulated accident flight test was carried out from Padang Kor Sispa to Hockey Field in UiTM Shah Alam. The data collected is analysed using descriptive frequency analysis. Further discussions were conducted to evaluate the effectiveness of the constructed semi-automatic multirotor UAV for deployment of medical supplies in terms of flight stability, performance, and endurance through flight experimental test. NAMTOR3 had effectively delivered medical aid kit within 200m radius in 4 minutes. The landing accuracy of NAMTOR3 is 5.02 meters. It was identified that different mobile system and application can affect the accuracy of GPS coordinates acquired before it was sent to NAMTOR3. When compared with land delivery by car, NAMTOR3 managed to deliver 2 minutes 29 seconds faster. This research provides meaningful insights on UAV payload transport capability which can be used as guidelines for future medical UAV research.

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