### THE APPLICATION OF UNMANNED AERIAL VEHICLE (UAV) FOR MONITORING SPORT COMPLEX IN UITM SERI ISKANDAR, PERAK

# ALEEYA FARISHA BINTI IDZWAN FARHANA IZZATI BINTI MAZUKI

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### ABSTRACT

## The Application of Unmanned Aerial Vehicle (UAV) For Monitoring Sport Complex in UITM Seri Iskandar, Perak

Unmanned Aerial Vehicles (UAV), also referred to as drones, equipped with various kinds of advanced detecting or surveying systems, are effective and low-cost in data acquisition, data delivery and sharing, which can benefit the building of infrastructures. This paper will give an overview of applications of drones in planning, designing, construction and maintenance of infrastructures. Building management standards require that the risk of both infrastructure damage and personal injury be reduced to a minimum. As a result, the redundancy factor is critical for positioning system components and structures, and it has a significant impact on flight reliability. Another crucial feature was the stability of hovering upon request, which enabled a methodical and complete examination of the damage. The goal of this research is to help the sport center that offers outdated records of each student's residence in 2D form by upgrading from 2D to 3D, which produces sharper and more detailed images. Using an UAV to conduct a visual examination of the building is an alternate method for determining defects on the buildings. The research has shown that deploying UAV for visual recording provides information for building inspection. Picture processing and analysis will indicate in detail where the issue occurred and how severe it is for the structure. Furthermore, inspection of buildings using UAV will assist to lower the cost of operation and reduce time.

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## (ALEEYA FARISHA BINTI IDZWAN) (FARHANA IZZATI BINTI MAZUKI)

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#### **CHAPTER 1**

#### **INTRODUCTION**

### 1.1 Background of study

The structural integrity and safety of sports complexes are of paramount importance due to their frequent use by large crowds. Regular monitoring for deformations caused by environmental factors, aging, or other stressors is crucial to maintain the safety and functionality of these structures. Traditional methods of deformation monitoring, such as manual inspections and ground-based surveying, can be time-consuming, labor-intensive, and often pose safety risks to personnel. Unmanned Aerial Vehicle (UAV) presents a promising alternative, offering efficient, accurate, and safer means of conducting deformation assessments. However, there are several challenges and considerations associated with the implementation of UAV technology in this context.

Unmanned Aerial Vehicle (UAVs) are becoming increasingly popular and beneficial for a variety of applications due to their ability to reach any destination and acquire photos with high spatial resolution. This study examines the use of UAV in Geospatial technology for 3D urban modelling, building assessment, and deformation detection through nadir picture processing. This paper presents the findings of a strategy that used a photogrammetric UAV platform to construct a recent urban DSM and estimate its extension by creating a second anticipated urban DSM. The methodology explores the use of a low-cost unmanned aerial vehicle