

UNIVERSITI TEKNOLOGI MARA

**THE CAPABILITY OF MULTI-ROTOR
DJI PHANTOM 3 ADVANCED FOR
DETECTING CRACK ON CONCRETE
WALL AT DIFFERENT DISTANCE**

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Dissertation submitted in fulfilment
of the requirement for the degree of
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AUTHOR'S DECLARATION

I declare that the work on this project /dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. The project/ dissertation are original and it is the result of my own work, unless otherwise indicated or acknowledge as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree qualification.

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ABSTRACT

Distance plays an important role in determining the crack detection where without proper or fixed value of distance, the time taken to capture image of crack is increased. It is important to know the capability of multi-rotor DJI Phantom 3 at different distance for detecting crack as the maximum distance may be useful for next buildings inspection where it shorten the time taken to inspect crack on the buildings. This paper provides the capability of multi-rotor DJI Phantom 3 for detecting crack at different distance. This study has been constructed by considered to three objectives that need to be achieved at the end of this research. The three objectives are to identify crack width of the study area, to study the relationship of distance affected the size of detectable crack by quantitative and qualitative measures and to access the accuracy of multi-rotor DJI Phantom 3 in detecting crack at different distance measurement. In this study covered four parts of methodology including planning and reconnaissance, data acquisition or collection, data processing and data analysis. Data processing is divided into two parts which using Agisoft software and Digimizer software. The accuracy assessment is used in order to analyze capabilities of multi-rotor DJI Phantom 3 in detecting crack at different distance. The qualitative measures uses edge detection algorithm of Digimizer software to detect crack whereas quantitative uses accuracy assessment with edge detection algorithm to study their relationship. The capabilities of multi-rotor DJI Phantom 3 in detecting crack at different distance is identified where hairline crack is visible at 3 meter, narrow crack at 5 meter, medium crack at 6 meter and 10 meter at wide crack.

TABLE OF CONTENTS

CONFIRMATION BY PANEL OF EXAMINERS	i
AUTHOR'S DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF SYMBOLS	xi
LIST OF ABBREVIATIONS/NOMENCLATURES	xii
CHAPTER ONE: INTRODUCTION	1
1.1 Research Background	1
1.2 Research Gap	2
1.3 Problem Statement	5
1.4 Aim & Objectives	6
1.5 Research Question	6
1.6 Research Methodology	6
1.6.1 Study Area	7
1.7 Significant of Study	8
1.8 Limitation of Study	9
1.9 Structure of Thesis	9
1.10 Summary	10
CHAPTER TWO: LITERATURE REVIEW	11
2.1 Introduction	11
2.2 Unmanned Aerial Vehicle	11
2.1.1 Definition of UAV	11
2.1.2 Types of UAV	11
2.1.3 Application of UAV	13
2.2 Crack Detection	13
2.2.1 Types of Crack	13
2.2.2 Significant of Crack Inspections	15

CHAPTER FOUR: RESULT AND ANALYSIS	43
4.1 Introduction	43
4.2 Result & Analysis of Data Collection	43
4.2.1 UAV Imagery	43
4.2.2 Result of CP/VP	44
4.2.2.1 CRM Coordinates	44
4.2.2.2 CP Coordinates	45
4.2.3 Verification Point Coordinates	46
4.3 Result & Analysis of Data Processing	47
4.3.1 Photo Alignment	47
4.3.2 Dense Point Cloud	48
4.3.3 3D Mesh	49
4.3.4 3D Texture	51
4.3.5 Geo-Referencing	52
4.3.6 Accuracy Assessment/RMSE/Verification	53
4.4 Crack Width Measurement	54
4.5 Quantitative & Qualitative Analysis	55
4.5.1 Qualitative Analysis of Crack Detection Measurement	55
4.5.2 Quantitative Analysis of Crack Detection Measurement	60
4.6 Maximum Distance for Crack Detection	61
4.7 Summary	62
CHAPTER FIVE: CONCLUSION	63
5.0 Introduction	63
5.1 Conclusion	63
5.2 Recommendations	65
REFERENCES	66
APPENDICES	70