



**DESIGN OF FLYING MECHANISM OF A
MICROMECHANICAL FLYING INSECTS (MFI)**

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DECLARATION

"I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature any degree.

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ABSTRACT

Micromechanical flying insects (MFI) is a miniature aerial unmanned vehicle (UAV) composed of body, wings and control system to operate the mechanism. Studies have been developed since 1998 in the University of California, Berkeley, USA to produce biomimetic robotic insects. Interpreting these prior studies has lead to a new design idea that will improve the mass, size and linkages system. This study focuses on the flying mechanism component of the MFI and also to select the most suitable design before producing the prototype. Three different designs with different mechanisms were proposed. Morphological chart analysis is used to determine the best mechanism based on few parameters. Mass, size, material and linkages are the substantially important consideration for the design. Solidworks software is used to analyze these designs. Mechanism 3 is chosen as the best design for the study with a total wingspan of 25.62 cm. Mass of the mechanism is 0.062 kg and the material used for the prototype is ABS. Two types of different size of binary links were chosen as the linkages system. Consideration on manufacturing the prototype also has taken to make sure dimension for each parts of the mechanism is capable to fabricate.

Keywords: Flying Mechanism, Micromechanical Flying Insects, Morphological Chart Analysis

TABLE OF CONTENTS

PAGE TITLE	i
ACKNOWLEDGEMENT	ii
ABSTRACT	iii
TABLE OF CONTENT	iv
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF ABBREVIATIONS	vii
CHAPTER 1	1
1. INTRODUCTION	1
1.1. Outline of the Project	1
1.2. Background	1
1.3. Problem Statement	4
1.4. Objectives of the Study	5
1.5. Scope of Work	6
CHAPTER 2	7
2. BACKGROUND OF RESEARCH PROBLEM	7
2.1. Introduction	7
2.2. Micromechanical Flying Insects System	9
2.3. Selection of Insects	11
2.4. Flapping Mechanism	13
2.4.1. Parallel Crank Rocker (PCR) Mechanism	14
2.4.2. Four Bar Mechanism	17
2.5. Material Selection	19
2.6. Linkages	20