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READY STEADY GO: DESIGN OF A PROTECTIVE, STABILISING CAMERA GIMBAL

An exegesis presented in partial fulfilment of the
requirements for the degree of

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IN
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ABSTRACT



Image 1: Desborough, G. (2016). Testing prototype gimbal.

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The rapid evolution of lightweight, high performance compact cameras in conjunction with electronic stabilisation has given photographers and filmmakers the ability to capture extremely high quality 'shake-free' footage. However most of the equipment currently available is cumbersome and offers poor protection for expensive cameras. This issue is especially problematic for subject matter like action sports such as BMX, skateboarding, and snow sports where the action is fast and the conditions can be extreme.

My design objective was to develop a protective, stabilising camera gimbal that was easy to use and extremely compact and lightweight. I also wanted to design for competitive cost in materials and manufacture to make my product available to a wide user base.

I used a spiral product development process involving multiple prototype iterations to develop aspects of the design, particularly the external roll axis which is a major feature. My final design incorporates innovation: in how the roll axis and drive was achieved; the mounting system which enables rapid set up and lens changes; a very high level of protection; and ease of use in a compact and lightweight unit.

The end result is a product which should appeal to leading edge amateur and semi-professional filmmakers in this area, and give them new options to expand their craft.

Keywords: industrial design, gimbal, stabilisation, action sports, lifestyle sports, low volume manufacturing.

¹ A gimbal is a stabiliser, usually in all three axes of rotation, that brings together electronics, sensors and motors to cancel motion and shake from the camera operator before it reaches the camera.

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CONTENTS

Page

ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	iv
1 INTRODUCTION.....	1
1.1 PERSONAL INFLUENCES.....	1
1.2 MARKET TRENDS.....	3
1.3 WHAT IS THE PRODUCT OPPORTUNITY?.....	4
1.4 SKILLS DEVELOPMENT.....	5
1.5 PRODUCT DEVELOPMENT PROCESS.....	6
1.6 SCHEDULE.....	7
2 CUSTOMER NEEDS RESEARCH.....	8
2.1 TARGET MARKET.....	8
2.2 USER NEEDS RESEARCH.....	9
3 PRODUCT SPECIFICATION.....	16
3.1 VISUAL PRECEDENTS.....	16
3.2 COMPETITIVE PRODUCTS ISSUES ANALYSIS.....	19
3.3 DESIGN GOALS.....	21
3.4 PRODUCT SPECIFICATIONS.....	22
4 CONCEPT DEVELOPMENT.....	23
4.1 DESIGN TOOLS.....	23
4.2 CONCEPT DEVELOPMENT.....	24
5 PROTOTYPING.....	27
5.1 OVERVIEW OF PROCESS.....	27
5.2 MATERIALS SELECTION.....	28
5.3 FIRST PROTOTYPE.....	29
5.4 SECOND PROTOTYPE.....	31
5.5 THIRD PROTOTYPE.....	33
5.6 FOURTH PROTOTYPE.....	37
5.7 FIFTH PROTOTYPE.....	41
5.8 SIXTH PROTOTYPE.....	46
5.9 SEVENTH PROTOTYPE.....	47
5.10 EIGHTH PROTOTYPE.....	49
5.11 NINTH PROTOTYPE.....	55
5.12 TENTH AND FINAL PROTOTYPE.....	57
5.13 USER TESTING.....	71
5.14 BALANCING PLATE (FABLAB PROJECT).....	72
6 SUMMARY AND CONCLUSIONS.....	73
6.1 DESIGN REVIEW.....	73
6.2 DESIGN FOR MANUFACTURING.....	75
6.3 DESIGN FOR ENVIRONMENT.....	76

6.4	PERFORMANCE AGAINST DESIGN SPECIFICATION	77
6.5	LEARNINGS	79
7	FUTURE DEVELOPMENT	80
7.1	POSSIBLE FUTURE DEVELOPMENT	80
8	REFERENCES.....	81
9	BIBLIOGRAPHY	85
10	LIST OF IMAGES / FIGURES.....	86
11	APPENDICES.....	90
11.1	CAMERA MOVEMENT TECHNIQUES.....	90
11.2	MARKET TRENDS.....	91
11.2.1	Stabilising equipment trends.....	91
11.2.2	Camera and filmmaking trends.....	92
11.2.3	'Lifestyle' sports and new media channels.....	94
11.3	PERSONAS OF POTENTIAL USERS	96
11.4	EXISTING PRODUCT OVERVIEW	101
11.4.1	Gimbal manufacturers	101
11.4.2	Key products in the gimbal market.....	102
11.4.3	Setup process for DJI Ronin	106
11.5	MATERIALS RESEARCH	107
11.5.1	Drop test standard (MIL-STD-810F 516.5)	110