

UNIVERSITI TEKNOLOGI MARA

**IMMERSIVE 3D SIMULATION THERAPY FOR
ACROPHOBIA**

NAZIRUL MUBIN BIN MOHAMED

**Thesis submitted in fulfilment of the requirements for
Bachelor of Computer Science(Hons) Multimedia Computing**

July 2014

ACKNOWLEDGEMENTS

Alhamdulillah, I really grateful to Allah S.W.T for blessing me with knowledge and time to successfully complete my final year projects thesis within the specified time.

This proposed project was possibly made by efforts of involving many people and parties that were providing much valuable information, references material, collaborative support and also motivation support. Special thanks to my lovely supervisor of project, Encik Syamsulhairi bin Yaakop for guiding me to finally succesful complete this final thesis and also for helping me throughout the project development. I would also say my biggest appreciation to En. Mohd Yunus Mohd.Yusuf for guidance, assistance and advices for report completion.

Thanks to my lectures and colleagues for support and sharing ideas and also helping me in completing this final year thesis projects, and finally thanks also to everyone who involved directly either indirectly especially my beloved family.

ABSTRACT

Virtual Reality therapy (VRT), dependent upon this modern innovation, has been as of late utilized as a part of the medication of subjects diagnosed with acrophobia, a phobia that is described by marked anxiety upon exposure to heights. Conventional VR frameworks for the medication of acrophobia have limits, over-excessive cost or to some degree unlikely realistic graphics. The objective of this study was to improve a cheap and more realistic virtual environment (VE) in which to perform introduction treatment for acrophobia. It is based on computer, and a virtual scene of a open room located on the highest level of a high building. The virtual situation incorporates an open lift encompassed by props by the side of a tower, which permits the patient to feel a feeling of heights. The viability of the VE was assessed through the clinical medicine of a subject who was experiencing the fear. Subsequently, it was demonstrated that this VR environment was adequate and reasonable at succeeding acrophobia agreeing not just to the examination comes about of a assortment of questionnaires prior and then afterward medication additionally to the subject's remarks that the VE appeared to inspire more fearful emotions than the true situation.

TABLE OF CONTENTS

| CONTENTS | PAGE |
|---|-------------|
| SUPERVISOR’S APPROVAL | i |
| DECLARATION | ii |
| ACKNOWLEDGEMENT | iii |
| ABSTRACT | iv |
| TABLE OF CONTENTS | v |
| LIST OF FIGURES | vii |
| CHAPTER 1 | 1 |
| INTRODUCTION | 1 |
| 1.1 Project Background..... | 1 |
| 1.2 Problem Statement..... | 3 |
| 1.3 Objectives | 5 |
| 1.4 Scope of Study..... | 6 |
| 1.5 Significance of the Project..... | 8 |
| 1.6 Conclusion..... | 9 |
| CHAPTER 2 | 10 |
| LITERATURE REVIEW | 10 |
| 2.1 Introduction..... | 10 |
| 2.2 Non-associative accounts..... | 12 |
| 2.3 The important of cognitive processes in Acrophobia..... | 14 |
| 2.4 The contemporary studying models..... | 15 |
| 2.5 Acrophobia treatment models-historical view..... | 18 |
| 2.6 Virtual Reality utilization for acrophobia treatment..... | 18 |
| 2.6.1 Potential of VR in acrophobia treatment..... | 18 |
| 2.6.2 Acrophobia treatment in VE..... | 19 |

| | |
|--|-----|
| CHAPTER 3 | 21 |
| RESEARCH METHODOLOGY | 21 |
| 3.1 Introduction..... | 21 |
| 3.2 Project Formulation Framework | 22 |
| 3.2.1 Methodology Model using ADDIE Model..... | 22 |
| 3.2.2 The ADDIE Model Procedure Description..... | 23 |
| 3.3 Project Methodology..... | 28 |
| 3.3.1 Analysis Phase..... | 28 |
| 3.3.2 Design Phase..... | 28 |
| 3.3.3 Development Phase..... | 29 |
| 3.3.4 Implementation Phase..... | 29 |
| 3.3.5 Evaluation Phase..... | 29 |
| 3.4 Project Form..... | 30 |
| 3.5 Hardware and Software Requirement..... | 31 |
| 3.5.1 Hardware..... | 31 |
| 3.5.2 Software..... | 31 |
| 3.6 Conclusion..... | 32 |
| CHAPTER 4 | 33 |
| FINDING AND ANALYSIS | 33 |
| 4.1 Introduction..... | 33 |
| 4.2 Detail Task and Activities..... | 33 |
| 4.3 Design and Development..... | 34 |
| 4.3.1 Virtual Reality Environment Therapy Design..... | 35. |
| 4.3.2 Analysis Phase..... | 35 |
| 4.3.3 Design Phase..... | 36 |
| 4.3.3.1 Structure of navigation..... | 37 |
| 4.3.4 Development Phase..... | 37 |
| 4.3.4.1 Environment Modelling..... | 37 |
| 4.3.4.2 3D Object model..... | 40 |
| 4.3.4.3 Exporting virtual environment file format..... | 45 |
| 4.3.4.4 Virtool programming level script implementation..... | 46 |
| 4.3.4.5 Sound usage in virtual environment..... | 48 |