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JUDUL: FTMK VIRTUAL DIRECTION NAVIGATOR (V-DirNav)

SESI PENGAJIAN: 1 - 2006/2007

Saya WAN SAZLI NASARUDDIN BIN SAIFUDIN

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<table>
<thead>
<tr>
<th>SULIT</th>
<th>TERHAD</th>
<th>TIDAK TERHAD</th>
</tr>
</thead>
</table>

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FTMK VIRTUAL DIRECTION NAVIGATION (V-DirNav)

WAN SAZLI NASARUDDIN B SAIFUDIN

This report is submitted in partial fulfilment of the requirements for the Bachelor of Computer Science (Interactive Media)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2007
DECLARATION

I hereby declare that this project report entitled

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is written by me and is my own effort and that no part has been plagiarized without citations.

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(EN. MUHAMMAD HAZIQ LIM B. ABDULLAH)
DEDICATION

I dedicate this thesis to my parents, especially my mother Pn Saripah Zam bt Syed Bakri. Without their patience, understanding, support and most of love, the completion of this work would not have been possible. Special thanks also to my uncle En Shahru Razdzi b Omar, my best friend miss Zakiah bt Mohd Zaki and to all that also contributed for complete the thesis.
ACKNOWLEDGEMENTS

Bismillahirahmannirahim.
First, Alhamdullillah and Thank You Allah S.W.T that finally I had been finished my PSM. The duration of PSM had been taken about 7 months from May 2007 until November 2007. A lot of experience gained in the documentation.

I would like to take this opportunity to thank my PSM supervisor, En Muhammad Haziq Lim Abdullah for his guidance throughout the period of PSM. I am much appreciating his assistance and all the valuable knowledge provided in helping me to complete the documentation.

Finally, I also express my deep gratitude to those who directly or indirectly helped me in completing this PSM documentation.

Thank you.
ABSTRACT

FTMK Virtual Direction Navigator (V-DirNav) is a 2D virtual direction navigator for Faculty of Information and Communication Technology (FTMK), Universiti Teknikal Malaysia Melaka (UTeM). This document records the process of development for V-DirNav from beginning until the design process in design phase. The main existing problem is students and visitors having difficulty to get direction navigation to the lecturer rooms or offices. The purposes of the project are to help the user get fast and easy direction navigation that will saves lots of time and energy by providing the virtual direction navigator and provides information about the staff or lectures in FTMK. V-DirNav also integrated with staff attendance system that use barcode scanner device. There are two levels of users. First level users will be the admin and lecturers while the second level users will be the students and visitors. The system will be develop as a web-based system using PHP programming language and MySQL as the database. The virtual direction navigation will be a 2D animation using Flash. Two types of methodologies that will be use are ADDIE model and Multimedia Production Process. The software requirements included are Microsoft Windows as an operating system, Apache as a web server, Dreamweaver as the web application-developing tool, Macromedia Flash as the animation authoring tool and Local Area Network (LAN). This project will cover the direction navigation in three-store FTMK main building at Durian Tunggal, Melaka.
ABSTRAK

# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>SUBJECT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DECLARATION</td>
<td>ii</td>
</tr>
<tr>
<td></td>
<td>DEDICATION</td>
<td>iii</td>
</tr>
<tr>
<td></td>
<td>ACKNOWLEDGEMENTS</td>
<td>iv</td>
</tr>
<tr>
<td></td>
<td>ABSTRACT</td>
<td>v</td>
</tr>
<tr>
<td></td>
<td>ABSTRAK</td>
<td>vi</td>
</tr>
<tr>
<td></td>
<td>TABLE OF CONTENTS</td>
<td>vii</td>
</tr>
<tr>
<td></td>
<td>LIST OF TABLE</td>
<td>xi</td>
</tr>
<tr>
<td></td>
<td>LIST OF FIGURE</td>
<td>xiii</td>
</tr>
<tr>
<td></td>
<td>LIST OF ABBREVIATION</td>
<td>xv</td>
</tr>
</tbody>
</table>

## CHAPTER I

INTRODUCTION

1.1 Project Background 1
1.2 Problem Statement (s) 2
1.3 Objectives 3
1.4 Scope 3
1.5 Project Significance 4
1.6 Expected Output 5
1.7 Conclusion 5

## CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction 6
2.2 Fact and Finding 6
   2.2.1 Domain 7
2.2.2 Existing Systems 7
2.2.3 Technique 13
2.3 Project Methodology 21
  2.3.1 ADDIE Model 22
  2.3.2 Multimedia Production Process 25
2.4 Project Requirements 26
  2.4.1 Software Requirement 26
  2.4.2 Hardware Requirement 27
  2.4.3 Other requirements 27
2.5 Project Schedule and Milestones 27
2.6 Conclusion 29

CHAPTER III ANALYSIS
3.1 Introduction 31
3.2 Problem Analysis 31
3.3 Requirement Analysis 35
  3.3.1 User Centered Design 36
  3.3.2 Others Requirements 41
3.4 Conclusion 43

CHAPTER IV DESIGN
4.1 Introduction 44
4.2 System Architecture 45
  4.2.1 Web 46
  4.2.2 Animation 47
4.3 Preliminary Design 48
  4.3.1 Storyboard Design 48
4.4 User Interface Design 49
  4.4.1 Navigation Design 51
  4.4.2 Input Design 52
  4.4.3 Output Design 53
4.5 Database Design 55
  4.5.1 Conceptual and Logical Database Design 55
<table>
<thead>
<tr>
<th>CHAPTER V</th>
<th>IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Introduction</td>
</tr>
<tr>
<td>5.2</td>
<td>Product and Implementation</td>
</tr>
<tr>
<td>5.2.1</td>
<td>Production of Text</td>
</tr>
<tr>
<td>5.2.2</td>
<td>Production of Graphic</td>
</tr>
<tr>
<td>5.2.3</td>
<td>Production of Animation</td>
</tr>
<tr>
<td>5.2.4</td>
<td>Production of Integration</td>
</tr>
<tr>
<td>5.3</td>
<td>Product Configuration Management</td>
</tr>
<tr>
<td>5.3.1</td>
<td>Configuration Environment Setup</td>
</tr>
<tr>
<td>5.3.1.1</td>
<td>Server Configuration</td>
</tr>
<tr>
<td>5.3.1.2</td>
<td>Hardware Configuration</td>
</tr>
<tr>
<td>5.3.1.3</td>
<td>Client Side Configuration</td>
</tr>
<tr>
<td>5.3.2</td>
<td>Version Control Procedure</td>
</tr>
<tr>
<td>5.4</td>
<td>Implementation Status</td>
</tr>
<tr>
<td>5.4.1</td>
<td>Modul Name: Authentications</td>
</tr>
<tr>
<td>5.4.2</td>
<td>Modul Name: User Registration</td>
</tr>
<tr>
<td>5.4.3</td>
<td>Modul Name: Admin and User Management</td>
</tr>
<tr>
<td>5.4.4</td>
<td>Modul Name: Report</td>
</tr>
<tr>
<td>5.4.5</td>
<td>Modul Name: Announcement</td>
</tr>
<tr>
<td>5.4.6</td>
<td>Modul Name: Upload Photo and Animation File</td>
</tr>
<tr>
<td>5.4.7</td>
<td>Modul Name: Modeling</td>
</tr>
<tr>
<td>5.4.8</td>
<td>Modul Name: Animation</td>
</tr>
<tr>
<td>5.5</td>
<td>Conclusion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER VI</th>
<th>TESTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Introduction</td>
</tr>
<tr>
<td>6.2</td>
<td>Test Plan</td>
</tr>
<tr>
<td>6.2.1</td>
<td>Test User</td>
</tr>
<tr>
<td>6.2.2</td>
<td>Test Environment</td>
</tr>
<tr>
<td>6.2.3</td>
<td>Test Schedule</td>
</tr>
</tbody>
</table>
6.2.4 Test Strategy
   6.2.4.1 Alpha Testing     80
   6.2.4.2 Beta Testing     81
6.2.5 Test Implementation
   6.2.5.1 Test Description     81
   6.2.5.2 Test Data     81
6.3 Test Result and Analysis
   6.3.1 Test Result     84
   6.3.2 Analysis Testing     88
6.4 Conclusion     89

CHAPTER VII
PROJECT CONCLUSION
7.1 Observation on Weaknesses and Strengths
   7.1.1 Project Weakness     90
   7.1.2 Project Strengths     90
7.2 Propositions for Improvement     91
7.3 Contribution     91
7.4 Conclusion     91

REFERENCES

APPENDICES
APPENDIX A
APPENDIX B
APPENDIX C
# LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>VRML users controller menu</td>
<td>8</td>
</tr>
<tr>
<td>2.2</td>
<td>Milestone for Projek Sarjana Muda</td>
<td>28</td>
</tr>
<tr>
<td>3.1</td>
<td>Streaming Rates</td>
<td>36</td>
</tr>
<tr>
<td>4.1</td>
<td>First level menu</td>
<td>51</td>
</tr>
<tr>
<td>4.2</td>
<td>Second level menu</td>
<td>52</td>
</tr>
<tr>
<td>4.3</td>
<td>User Input</td>
<td>53</td>
</tr>
<tr>
<td>5.1</td>
<td>Text Production</td>
<td>61</td>
</tr>
<tr>
<td>5.2</td>
<td>Logo Production</td>
<td>64</td>
</tr>
<tr>
<td>5.3</td>
<td>Banner Production</td>
<td>65</td>
</tr>
<tr>
<td>5.4</td>
<td>MySQL Server Configuration</td>
<td>70</td>
</tr>
<tr>
<td>5.5</td>
<td>List of Version Control Procedure</td>
<td>71</td>
</tr>
<tr>
<td>5.6</td>
<td>Implement Status for Module : Authentication</td>
<td>73</td>
</tr>
<tr>
<td>5.7</td>
<td>Implement Status for Module : User Registration</td>
<td>74</td>
</tr>
<tr>
<td>5.8</td>
<td>Implement Status for Module : Admin and User Management</td>
<td>74</td>
</tr>
<tr>
<td>5.9</td>
<td>Implement Status for Module : Report</td>
<td>74</td>
</tr>
<tr>
<td>5.10</td>
<td>Implement Status for Module : Announcement</td>
<td>75</td>
</tr>
<tr>
<td>5.11</td>
<td>Implement Status for Module : Upload Photo and Animation File</td>
<td>75</td>
</tr>
<tr>
<td>5.12</td>
<td>Implement Status for Module : Modeling</td>
<td>75</td>
</tr>
<tr>
<td>5.13</td>
<td>Implement Status for Module : Animation</td>
<td>76</td>
</tr>
<tr>
<td>6.1</td>
<td>Hardware Requirement in Test Environment</td>
<td>79</td>
</tr>
<tr>
<td>6.2</td>
<td>Software Requirement in Test Environment</td>
<td>79</td>
</tr>
<tr>
<td>6.3</td>
<td>Test Schedule Specification V-DirNav</td>
<td>80</td>
</tr>
<tr>
<td>6.4</td>
<td>Test Data for System Tester</td>
<td>82</td>
</tr>
<tr>
<td>6.5</td>
<td>Test Data for Kiosk Tester</td>
<td>83</td>
</tr>
<tr>
<td>TABLE</td>
<td>TITLE</td>
<td>PAGE</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>6.6</td>
<td>Test Case Result in User Authentication</td>
<td>84</td>
</tr>
<tr>
<td>6.7</td>
<td>Test Case Result in Registration User</td>
<td>85</td>
</tr>
<tr>
<td>6.8</td>
<td>Test Case Result in Update Data</td>
<td>86</td>
</tr>
<tr>
<td>6.9</td>
<td>Test Case Result in Room Management</td>
<td>86</td>
</tr>
<tr>
<td>6.10</td>
<td>Test Case Result in Announcement</td>
<td>87</td>
</tr>
<tr>
<td>6.11</td>
<td>Test Case Result in Attendance</td>
<td>88</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>DIAGRAM</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 2.1</td>
<td>Nemours Virtual Laboratory Tour</td>
<td>8</td>
</tr>
<tr>
<td>Figure 2.2</td>
<td>Nemours Virtual Laboratory environment</td>
<td>10</td>
</tr>
<tr>
<td>Figure 2.3</td>
<td>The virtual tour services using TIP technique</td>
<td>11</td>
</tr>
<tr>
<td>Figure 2.4</td>
<td>The virtual using static image technique</td>
<td>12</td>
</tr>
<tr>
<td>Figure 2.5</td>
<td>Loading problem using static image technique</td>
<td>12</td>
</tr>
<tr>
<td>Figure 2.6</td>
<td>The virtual using static image technique</td>
<td>13</td>
</tr>
<tr>
<td>Figure 2.7</td>
<td>The OpenGL logo</td>
<td>14</td>
</tr>
<tr>
<td>Figure 2.8</td>
<td>Example of visualizations using VRML technique</td>
<td>15</td>
</tr>
<tr>
<td>Figure 2.9</td>
<td>Cortona Web browser plug-in installation</td>
<td>16</td>
</tr>
<tr>
<td>Figure 2.10</td>
<td>TIP Technique</td>
<td>17</td>
</tr>
<tr>
<td>Figure 2.11</td>
<td>Example of menu option using TIP technique</td>
<td>18</td>
</tr>
<tr>
<td>Figure 2.12</td>
<td>Example of visualizations using TIP technique</td>
<td>18</td>
</tr>
<tr>
<td>Figure 2.13</td>
<td>Drum fisheye images</td>
<td>19</td>
</tr>
<tr>
<td>Figure 2.14</td>
<td>Full Frame fisheye images</td>
<td>19</td>
</tr>
<tr>
<td>Figure 2.15</td>
<td>Full circularfisheye images</td>
<td>20</td>
</tr>
<tr>
<td>Figure 2.16</td>
<td>Virtual tour using Panoweaver</td>
<td>21</td>
</tr>
<tr>
<td>Figure 2.17</td>
<td>ADDIE design model</td>
<td>23</td>
</tr>
<tr>
<td>Figure 2.18</td>
<td>Multimedia Production Process</td>
<td>25</td>
</tr>
<tr>
<td>Figure 3.1</td>
<td>V-DirNav System Flow Design</td>
<td>39</td>
</tr>
<tr>
<td>Figure 3.2</td>
<td>Example of Layout Interface for the Second Level User</td>
<td>40</td>
</tr>
<tr>
<td>Figure 3.3</td>
<td>Layout of Virtual Direction Navigation Interface Section</td>
<td>40</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>V-DirNav web system flow design</td>
<td>45</td>
</tr>
<tr>
<td>Figure 4.2</td>
<td>V-DirNav web system flow design</td>
<td>46</td>
</tr>
<tr>
<td>Figure 4.3</td>
<td>V-DirNav animation system flow design</td>
<td>48</td>
</tr>
<tr>
<td>Figure 4.4</td>
<td>Interface Layout for First Level User Interface</td>
<td>49</td>
</tr>
<tr>
<td>DIAGRAM</td>
<td>TITLE</td>
<td>PAGE</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Figure 4.5</td>
<td>Interface Layout for Second Level User Interface</td>
<td>50</td>
</tr>
<tr>
<td>Figure 4.6</td>
<td>Virtual Navigation Interface</td>
<td>50</td>
</tr>
<tr>
<td>Figure 4.7</td>
<td>First level users login interface</td>
<td>53</td>
</tr>
<tr>
<td>Figure 4.8</td>
<td>First level users main interface</td>
<td>54</td>
</tr>
<tr>
<td>Figure 4.9</td>
<td>Profile update interface</td>
<td>54</td>
</tr>
<tr>
<td>Figure 4.10</td>
<td>Virtual Navigation Interface</td>
<td>55</td>
</tr>
<tr>
<td>Figure 4.11</td>
<td>V-DirNav Context Diagram</td>
<td>56</td>
</tr>
<tr>
<td>Figure 4.12</td>
<td>V-DirNav Data Flow Diagram Level 0</td>
<td>56</td>
</tr>
<tr>
<td>Figure 4.13</td>
<td>V-DirNav Data Flow Diagram Level 1</td>
<td>57</td>
</tr>
<tr>
<td>Figure 4.14</td>
<td>V-DirNav Data Flow Diagram Level 1</td>
<td>57</td>
</tr>
<tr>
<td>Figure 4.15</td>
<td>V-DirNav Data Flow Diagram Level 1</td>
<td>58</td>
</tr>
<tr>
<td>Figure 4.16</td>
<td>V-DirNav Data Flow Diagram Level 1</td>
<td>58</td>
</tr>
<tr>
<td>Figure 4.17</td>
<td>V-DirNav Entity Relationship Diagram</td>
<td>59</td>
</tr>
<tr>
<td>Figure 5.1</td>
<td>Graphics Integration Flow</td>
<td>61</td>
</tr>
<tr>
<td>Figure 5.2</td>
<td>Graphics Integration Flow</td>
<td>63</td>
</tr>
<tr>
<td>Figure 5.3</td>
<td>Sample logo</td>
<td>63</td>
</tr>
<tr>
<td>Figure 5.4</td>
<td>Sample Graphic</td>
<td>64</td>
</tr>
<tr>
<td>Figure 5.5</td>
<td>V-DirNav Banner</td>
<td>64</td>
</tr>
<tr>
<td>Figure 5.6</td>
<td>Animation Integration Flow</td>
<td>66</td>
</tr>
<tr>
<td>Figure 5.7</td>
<td>Sample of sequence direction navigation</td>
<td>66</td>
</tr>
<tr>
<td>Figure 5.8</td>
<td>System Integration Flow</td>
<td>68</td>
</tr>
<tr>
<td>Figure 5.9</td>
<td>V-DirNav project integrations design</td>
<td>68</td>
</tr>
<tr>
<td>Figure 5.10</td>
<td>V-DirNav system architecture design</td>
<td>69</td>
</tr>
<tr>
<td>Figure 6.1</td>
<td>Testing result</td>
<td>89</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>3DsMax</td>
<td>3D Studio Max</td>
<td></td>
</tr>
<tr>
<td>AppServ</td>
<td>Localhost</td>
<td></td>
</tr>
<tr>
<td>CAD</td>
<td>Computer-Aided Design</td>
<td></td>
</tr>
<tr>
<td>ERD</td>
<td>Entity Relationship Diagram</td>
<td></td>
</tr>
<tr>
<td>FTMK</td>
<td>Fakulti Teknologi Maklumat dan Komunikasi</td>
<td></td>
</tr>
<tr>
<td>HMD</td>
<td>Head Mounted Display</td>
<td></td>
</tr>
<tr>
<td>IDM</td>
<td>Iterative Development Methodology</td>
<td></td>
</tr>
<tr>
<td>ISD</td>
<td>Instructional System Design</td>
<td></td>
</tr>
<tr>
<td>JPEG</td>
<td>Joint Photographic Expert Group</td>
<td></td>
</tr>
<tr>
<td>Kbps</td>
<td>Kilo Bit per-second</td>
<td></td>
</tr>
<tr>
<td>LAN</td>
<td>Local Area Network</td>
<td></td>
</tr>
<tr>
<td>MySQL</td>
<td>My Structure Query Language</td>
<td></td>
</tr>
<tr>
<td>PC</td>
<td>Personal Computer</td>
<td></td>
</tr>
<tr>
<td>PHP</td>
<td>Hypertext Pre-processor</td>
<td></td>
</tr>
<tr>
<td>PSM</td>
<td>Projek Sarjana Muda</td>
<td></td>
</tr>
<tr>
<td>SDM</td>
<td>System Development Methodology</td>
<td></td>
</tr>
<tr>
<td>TIP</td>
<td>Tour into Picture</td>
<td></td>
</tr>
<tr>
<td>UTeM</td>
<td>Universiti Teknikal Malaysia Melaka</td>
<td></td>
</tr>
<tr>
<td>V-DirNav</td>
<td>FTMK Virtual Direction Navigation</td>
<td></td>
</tr>
<tr>
<td>VR</td>
<td>Virtual Reality</td>
<td></td>
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<td>VW</td>
<td>Virtual World</td>
<td></td>
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<tr>
<td>VRML</td>
<td>Virtual Reality Modeling Language</td>
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<tr>
<td>VPM</td>
<td>Video Production Model</td>
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CHAPTER I

INTRODUCTION

1.1 Project Background

FTMK Virtual Direction Navigation (V-DirNav) system is a system that used a virtual concept to help the users by giving directions navigation visualization. This system is used by all the students, visitors and lecturers of the Faculty of Information and Communications Technology (FTMK), Universiti Teknikal Malaysia Melaka (UTeM). V-DirNav provides direction navigation in the FTMK buildings at UTeM main campus which is placed at Durian Tunggal, Melaka. The main purpose of the project is to help the user to get fast and easy direction navigation which will saves lots of time and energy.

The systems also function as an information system where all the lecturers information are stored and can be view by the users. V-DirNav also is integrated with a barcode scan device which acts as the attendance system for a staffs. Other then that, touch screen also is used as a searching and navigator device. Touch screen enable the users to interact with the system. Flash is a main tools for the animation while PHP programming language be used to create the system coding. MySQL is a database to store all the data and information. Further explanation will be brief on the next sections.
1.2 Problem Statements

Students and visitors of FTMK usually have difficulty to find a direction of the lecturers room, administration room, laboratory or office. Some times, they get lost in the building while looking for the correct direction. Other common problem is the lecturer or the person is not available in their room, when someone looking for them. The users, especially the visitors are also having problems to asking for a directions, either there is no other person to help or the person do not know the direction that requested by the visitors. Thing is getting worse when the user are in a hurry or have something urgent to settle. Therefore, V-DirNav uses Virtual Reality (VR) approach to give virtual direction navigation. The Virtual directions are presented in a 2D animation frame by frame technique. According to Haque, Mohammed E (2001), virtual environment with multimedia, animation, interaction and manipulated image visualization technique can enhanced the understanding. Virtual environment can simulate the direction that difficult to explain and understand in other ways.

Without this system, lots of energy and time will be wasted to walk around without a correct direction. This system also functions as an information system to the user. This can help to solve the lack of information problems. With the information, the user get a better view or information about where the lecturer are, what is the best time to see or make appointment and what is the current activities in FTMK.

With the additional module like attendance system and the used of touch screen and swipe scan devices, this system will be easy to use which make V-DirNav a suitable system to counter all the problems and meet the project objectives. All the objectives will be list on the next section.
1.3 Objective

The objectives for this project are:

- Provide a virtual direction navigator to the user. User 3D direction animation to help them gain better understanding and idea of the direction they are looking for.

- Provide information about the staff or lecturers from FTMK. Basics information such as name, picture, email, office phone number and announcements are showed.

- Integrate staff attendance system with virtual direction navigator. Using a barcode scanner to scan and read the staff matrix card, the time in and time out are recorded into the database and update the available status of each staff.

1.4 Scope

The project scope divided in to three sections such as Project Scope, Module Scope and Target User. Project Scope explains the overall scope of the project. Module Scope explains all the modules scope that is included in the V-DirNav system. Target User state the users of the system and the system limitation for each type of users.

Project scopes of V-DirNav are the virtual directions cover all the FTMK lecturers rooms at FTMK three-store building. There are more then 80 lecturers rooms at the left and right wings of the three-store building. The directions also included all the importance places like the FTMK office, wash room and prayer room. The project be develop used a PHP web based programming language and Flash action script for the animations. This system only work on the FTMK local area network (LAN) and not via internet. Module scopes of this project are 2D flash
directions navigation which acts as a virtual direction environment. Two type of animation view be produced such as plan view from top and perspective view as a virtual 3D walkthrough. V-DirNav also has an information system module where it stores the lecturers or staffs data and FTMK activities. The third module is the attendance module. This module is integrated with a barcode scan devise to get the input and data. This module determines either the lecturers is available in their rooms or not.

Target users of V-DirNav are all the FTMK staffs and lecturers. The staffs and lecturers will be classified as first level of users and they are able to use the system and update their attendance, activities or announcements information. The second levels of users are the students and visitors. The users use the V-DirNav system to get their directions navigation as requested. Other then that, they are able to get the availability status of the lecturers and information about the current activities or announcements.

1.5 Project Significance

This project give a great benefit to the students, lecturers, admin and mostly the FTMK’s visitors. The users will get a better help for direction navigation. A good visualization by using VR concept enhance the understanding and helps the user to get a good view and idea of the direction that they needed. V-DirNav also helps the user to save their time and energy to get a direction. The user also is able to know either the lecturers are in their room or not before they go to the lecturer room. This project also brings lots of benefit to all the BITM students that take Virtual Reality Technology subject. It can be an example for the BITM students to get the view of what VR can do and the benefit of using VR as a direction navigator. V-DirNav also is as a solution to the problem encounter.
1.6 Expected Output

The output of V-DirNav should meet the objectives of the project. V-DirNav provides an interactive system to the lecturers, students and visitors of FTMK building. It also provides virtual direction navigation to the users. The output of the project gives information of the lecturers availability status in their room, activities and announcements.

V-DirNav is integrated with the attendance system for the FTMK staffs by using a smart card with the barcode scan device. This system uses a touch screen monitor to allow the user to interact and used the system easily and friendly.

1.7 Conclusion

This chapter is the introduction of the V-DirNav project. It illustrates and explains the project background, the problem statements, objectives, scope of the project, project significant and the expected output. This chapter determines the overall understanding of the project and the importance of it.

The methodology to the development process is explained in next chapter. In the next chapter, all the related literature is review and determine. Literature review is importance to ensure the project is in a right track which rifer to previous and future similar researches that have done worldwide.
CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

Literature review is the review of a collection of published research relevant to a research questions. All good research and writing is guided by a review of the relevant literature. The methodology is a way to use all available approaches, technique and tools used to achieve predetermined objectives.

This chapter also explains the methodology to be used in the project development. The methodology consists of several phases as guidelines that are to be achieved. The project requirements such as software and hardware, for the project development are determined. The project milestone from the start until the delivery phases are also be brief and list in this chapter. The milestone and Gantt chart is important as a guideline to ensure the project can be finish according to the schedule and plan.

2.2 Fact and Findings

Fact is a statement or assertion of verified information about something that is the case or has happened while finding is the act of determining the properties of something, usually by research or calculation. For this project, fact and finding is important to determine the domain of the project. All the fact and finding be
supported by a review of the existing system and technique that related and already be used by the others. The fact and finding that be review are the Open Graphic Library (OpenGL), Virtual Reality Modeling Language (VRML) and Tour into Picture (TIP) technique. OpenGL and VRML is a programming language that widely used to create a virtual reality environment while TIP is a technique to produce virtual tour visualization.

2.2.1 Domain

V-DirNav is a system that used an animation to deliver virtual direction navigation to the user and the domain is ICT in Virtual Visualization. Virtual Reality (VR) also known as Virtual World (VW). It is a computer simulated typically appears to the real world. VR has been around since the years of Morton Heilig in 1960’s known as a ‘SENSORAMA’. For this project, the animation will be produce as a virtual 2D animation by using a flash as the animation tool.

2.2.2 Existing Systems

From the research, virtual direction navigation system already be implemented and used by several institutions, organizations and company such as Nemours Children Hospital, VisualTour.com, Van Goh’s Van Goghs Gallery and others. The purpose of using VR simulation visualization is to create an animation simulation and ‘being there feeling” that can help the user to understand and get the better navigation visualizations.

i) Nemours Children Hospital

Figure 2.1 is an example of an organization that used VRML technique to visualize the virtual environment of their laboratory. The virtual tour can be visit from http://gait.aidi.udel.edu. The purpose of the virtual laboratory is to give a virtual view and tour in to the laboratory. The user can control and interact with the virtual
tour by using the menu that has been provided. Nemours Virtual Laboratory user can walk, fly and study the virtual environment of the laboratory.

![Nemours Virtual Laboratory](image)

**Figure 2.1: Nemours Virtual Laboratory Tour.**

The user also can used a plan, pan, turn or roll mode to get a better controlling of the virtual movement. VRML also provide a special controlling option like go to, align, view, restore and fit. This function is important, especially the restore function. Where the new user is always get ‘lost in the virtual environment world’ and therefore, this restore function can reset the position of view to the start. Table 2.1 shows the VRML user controller menu. To view the virtual environment, a plug-in must be installed first. Cortona viewer is the example of VRML viewer that widely be used.

**Table 2.1: VRML users controller menu**

<table>
<thead>
<tr>
<th>Menu</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Walking" /></td>
<td>Walking control. User can only move forward, backward, left or right.</td>
</tr>
<tr>
<td><img src="image" alt="Fly" /></td>
<td>Fly control. Users can fly around the virtual world.</td>
</tr>
<tr>
<td><img src="image" alt="Study" /></td>
<td>Study control. The user can get closer to the object or model of the virtual environment.</td>
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</tbody>
</table>