CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation and Testing

5.1.1 Implementation Plan

Development of the solution is done on Blender version 2.57b using the bundled Python version 3.2. Additional add-on used is Face Bone Tool build 2011-3-25. The solution is designed to run on virtually any hardware platform as long as it can run the same version of Blender and Python and has the additional Face Bone Tool already installed. Assume that the user has a set of phoneme actions ready to use and of the same variation.

5.1.2 Testing Plan

To test the solution, it will be implemented in a workstation in a selected animation studio that can run the same version of Blender. An expert animator will then use the solution to create a simple walk animation and lip-sync animation; first manually and then again using the solution, VisRig and LipBlend respectively. A third test will be taken after an hour has passed since the second test in order to create more familiarity for the test user in using the tools. Time differences and user responses will be recorded.

Animating a humanoid model walking would certainly involve manipulating most, if not all, of the bones of the model’s body. This way it is predicted that the VisRig tool would be used extensively in order to create the animation. In addition, a simple walk animation means that extraneous detail in the animation is not needed.
To test the LipBlend tool, a short lip sync animation over the words “hello world” will be used. This method is chosen because it is only important to test the functionality of the tool and the user’s response on it. Words of longer length would potentially increase the test time unnecessarily.

All tests will be done on the same premises. They will be done on the same platform, using the same version of Blender and additional software, and start with pre-made lip animation ready for use.

A brief introduction will be given to the test user in order for him/her to understand how to use the solution.

5.2 System Specification

5.2.1 Development Platform

The entire development of the solution is done on a single platform. The specifications of the development platform are:

LENOVO IdeaPad Y450 Notebook

- Processor: Intel Core 2 Duo CPU T6600 @ 2.20 GHz (2 CPUs)
- VGA: NVIDIA GeForce G 110M 256MB
- Memory: 2 GB DDR3
- Hard Disk: 320 GB (Serial ATA, 5400 rpm)
- Screen: Type 14 (35.6 cm) wide (1366x768)
- Operating System: Windows 7 Professional 32-bit (6.1, build 7601)
5.2.2 Blender Minimum Specification

The following is the minimum requirements to run Blender version 2.57b:

**CLIENT PLATFORM**

- Processor: 1GHz Single Core CPU
- VGA: Any OpenGL compatible graphic card with 64 MB RAM
- Memory: 512 MB RAM
- Hard Disk: 72.9 MB space required upon installation
- Operating System: Windows (XP, Vista, 7), Mac OS X 10.4 and later, Linux, FreeBSD 6.2 i386

5.3 Software Configuration

To use the solutions, the platform must first install Blender version 2.57b and install the Face Rig Tool into Blender:

1. Download and install Blender 2.57b either from download.cnet.com or blender.org
2. Download Face Rig Tool from http://sites.google.com/site/khuuyjblend/home/blender/script/face-bone-tool
3. Install Face Rig Tool by placing rig_face_bone_tool.py into the corresponding installation folder. For Windows 7 under default Blender installation procedures, the path will be: \Users\[user]\AppData\Roaming\Blender Foundation\Blender\2.57\scripts\addons\n
To install the solutions, the individual Python scripts must be copied into the same add-ons directory.
Once all python scripts are installed it is time to run Blender 2.57b and activate the add-ons:

1. In Blender, open *User Preferences* and select the *Add-ons* tab

2. To activate Rigify and Face Bone Tool, select *Rigging* category from the left side-bar

3. From the listed add-ons, mark the check box for Rigify and Face Bone Tool panels

4. To activate VisRig tool, select *Rigging* category from the left side-bar

5. Mark the check box in the VisRig panel

6. To activate LipBlend, select *Animation* category from the left side-bar

7. Mark the check box in the LipBlend panel

After all the necessary add-ons are activated, Blender and the solution tools are now ready to be used. It is assumed that the user already has the pre-made lip animation to use with LipBlend.
5.4 Testing

5.4.1 Testing on Test Platform

Table 7 - Time Comparison Matrix

<table>
<thead>
<tr>
<th>Walk Cycle Animation</th>
<th>without Aid</th>
<th>with Aid (trial run)</th>
<th>with Aid</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>37 minutes</td>
<td>44 minutes</td>
<td>33 minutes</td>
</tr>
<tr>
<td>Lip Sync Animation</td>
<td>16 minutes</td>
<td>28 minutes</td>
<td>14 minutes</td>
</tr>
</tbody>
</table>

Table 8 - Functionality Test Matrix

<table>
<thead>
<tr>
<th>No.</th>
<th>Functionality</th>
<th>Expected Outcome</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>VisRig Tool</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Select RIG</td>
<td>User can select a RIG</td>
<td>Functional</td>
</tr>
<tr>
<td>2</td>
<td>Select Bone</td>
<td>User can select a bone and make it active</td>
<td>Functional</td>
</tr>
<tr>
<td>LipBlend Tool</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Select dictionary</td>
<td>External dictionary is loaded into memory</td>
<td>Functional</td>
</tr>
<tr>
<td>4</td>
<td>Search dictionary</td>
<td>Search and match dictionary with input string; output phonemes</td>
<td>Functional</td>
</tr>
<tr>
<td>5</td>
<td>Generate Phoneme</td>
<td>Match output phoneme with corresponding pre-made lip animation</td>
<td>Functional</td>
</tr>
<tr>
<td>6</td>
<td>Drive animation</td>
<td>Target lip bones are animated according to input string</td>
<td>Functional</td>
</tr>
</tbody>
</table>

5.4.2 User Response

User Profile

1. Please specify your age and gender: (23) (M)

2. How many months/years of experience in Blender animation do you have?
   - 3 years

3. How many Blender animation projects have you completed?
   - Lost count; more than 10.
VisRig Tool

1. Do you find VisRig tool easy to understand?
   • Yes

2. Do you find VisRig tool easy to use?
   • Yes

3. Have you ever used a similar tool? If yes, please specify the tool’s name:
   • Yes; Advanced Skeleton by Animation Studio

4. Do you find any differences in your work methods? (Better/Worse – How much)
   • Better, it is easier to select bones and easier to animate

5. Do you notice any change in work speed? (Faster/Slower - How much?)
   • Faster, can’t say but it is noticeable

6. Do think VisRig may help your animation work? (Yes/No)
   • Yes

7. Do you think VisRig is important in helping your work? (Yes/No – Why?)
   • Yes, it makes animation easier and can focus on more detailed movement

8. Would you use VisRig in your work? (Yes/No)
   • Yes
LipBlend Tool

1. Do you find LipBlend tool easy to understand? (Yes/No)
   • No

2. Do you find LipBlend tool easy to use? (Yes/No)
   • Yes

3. Have you ever used a similar tool?
   • No

4. Do you find any differences in your work methods? (Better/Worse – How much)
   • Better, don’t have to manually match phonemes with lip animation, can focus on better facial animation

5. Do you notice any change in work speed? (Faster/Slower - How much?)
   • Not much, probably the same

6. Do think LipBlend may help your animation work? (Yes/No)
   • Yes

7. Do you think LipBlend is important in helping your work? (Yes/No - Why?)
   • Yes, it is easier to animate the lips and can focus on getting detailed animation

8. Would you use these solutions in your work? (Yes/No)
   • Yes
5.5 Test Results and User Response Summary

Figure 36 shows the time spent on each scenarios. There are two main scenarios divided into three parts. The scenarios are creating a simple walk animation and then creating a simple lip sync animation over the words “hello world”. The three parts are tests to observe any change in time to complete the scenarios. The tests are a control test without the tools, a trial run test with the tools, and a final test with the tools.

Figure 37 shows the status of the functionalities of each tool by the time of the tests. All functions of the tools are functional.

Sub-chapter 5.4.2 lists the questionnaire directed for and has been answered by the test user. The first part states the test user’s profile and his experience with Blender Animation. The second and third parts ask the test user’s opinion on using the tools and gauge how good or bad he response to the tools.