[IG] Report

Alfano Domenico, Del Verme Manuel, Feola Luigi

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1 Introduction

This project represents a 3-D view of the system, that the user can navigate as an humanoid avatar.
The inspiration comes from the film "**Hackers**", a 1995 American crime film directed by Iain Softley and starring Jonny Lee Miller, Angelina Jolie. Made when the internet was unfamiliar to the general public, it reflects the ideals laid out in the Hacker Manifesto quoted in the film: "*This is our world now... the world of the electron and the switch [...] We exist without skin color, without nationality, without religious bias... and you call us criminals. [...] Yes, I am a criminal. My crime is that of curiosity.*".

In the following document we describe our Interactive Graphics project. We used an external a WebGL library developed by Ilmari Heikkinen [1] initially just used to create WebGL sldies but we found it useful to use the same library for textures and object abstraction, hence the library itself changed from accessory for slide to integral part of the project.

[1] https://www.fhtr.net/

2 Start Page

Figure 1: Initial window

The user is presented with a setting panel, as shown in *figure 1*, the page layout was inspired by old school terminals, fitting the project theme. The visual effects exploit chrome's webkit engine to add noise and interference. In this menu you can configure the environment available to agent . More specifically you can set:

- The starting path where the agent will start.
- An option to choose an image texture or a color texture for each type of file.

The choice of texture is exclusive (i.e. either images or colors). The user has, for each extension, a select button with several different colors, setting and one as default. The button allows to select a path from stored directories and for playing (e.g. to start the second page).
While the user is customizing the environment a soundtrack is played to ease the process.
As shown in *figure 2* several file types are recognized out of the box, some examples are:

1. html.
2. image files like jpg and png.
3. javascript.
4. audio files, with mp3 format.
5. video files, with mp4 and mkv format.

6. pdf.
7. power point files.
8. python.
9. text file with txt extension.
10. compressed files with zip extension.
11. for all others ("unknown") file extensions a default (question mark) texture is used.

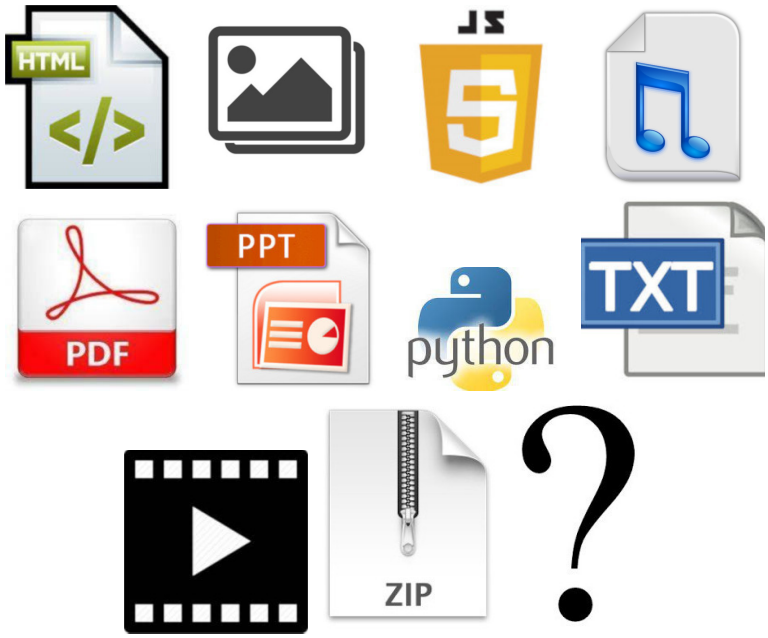

Figure 2: Icons

When the user is finished customizing the environment the game is started by selecting a folder or the "Connect" button.

3 Game Page

In the game we applied various textures using class Magi.
For the text we used **Magi.Tex()**, where we specify:

content : specification about what will became a texture (e.g. name of file or folder);

font size : the seize of the choosen font;

color : the color of the text;

font : the font (e.g. Arial).

For images we used **Magi.Texture.load()**, where we specify:

the **path** of the directory to be loaded;

a **callback** which handles the assignment of the texture to the virtual object;

The other most important thing is how we have build the heirarchical structure for folder, and files as well as the one for the agent. We have done this using the function **Magi.Cube()** and it's variants, which allow you to instantiate a cube with specific scale, position and other properties for cube.

3.1 Folders

The environment is composed by directories, represented as planes, and file represented as tiles. The feeling is that you are on a microchip where files are buildings. In fact we apply the appropriate image texture (*figure 3*). To illuminate the ambient we have instantiated also a positional light at the center of the root folder.
Each directory is linked to all its immediate subdirectories by a black connector line. The whole structure represented as a tree graph where the parent is proportionally bigger than its children, and all children at the same depth have equal dimension.
Another useful property of the folder is the name itself. Which allows you to know where you are by just looking up and reading the folder name written above it (*figure 3*). You know you are in the root folder because its name is "/" as it's the UNIX standard.

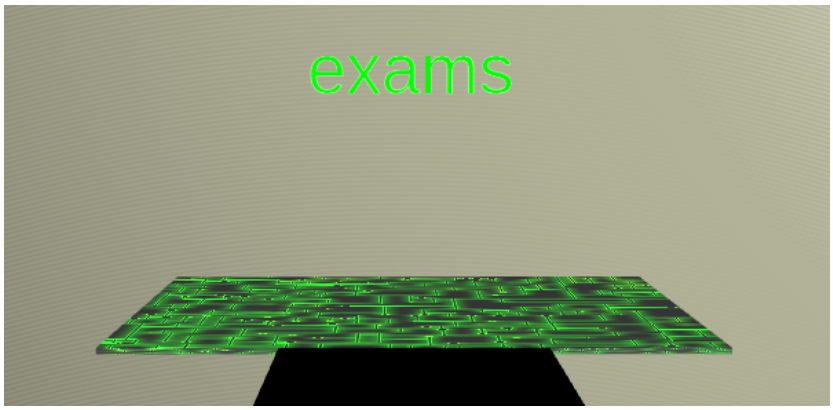

Figure 3: Texture Folder

3.2 Files

Files are the core elements of this world. After creating the file cube, we apply a different texture for each recognized file, or a question mark for unknown files, the name of each file is also positioned on top of the model. The user can interact with the files by infecting them (and destroying them), as we will explain after in this report, it will happen when the agent collide with them. After that, files ascends far away from the world (*figure 4*). In this sense the file starting rotate up, and using lights we show the fade-out. So the emitted light is red, and the file became quite transparent.

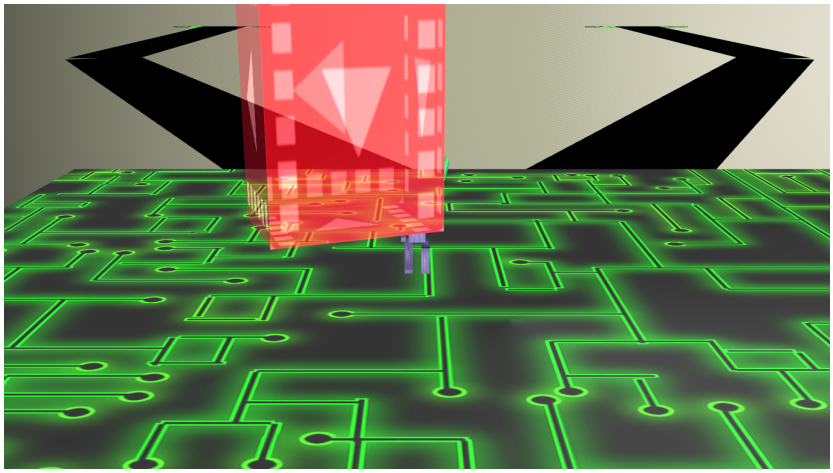

Figure 4: Agent in action

3.3 Agent

The game begins with your avatar appearing in the middle of the root directory out of nowhere. In order to navigate in this structure, you control an agent with the head replaced by a camera (*figure 5*). The agent is implemented in a hierarchical way, where each piece is linked to the body. So the agent is composed by six pieces: head, arms, body, and legs. Each one of these is realized with the Magi.Cube function. To the head we applied a image camera texture in order to represent the eyes of the robot.
For moving you can either move simply using left,right,up and down arrows, either using WASD configuration. You can rotate the camera just using left mouse button.

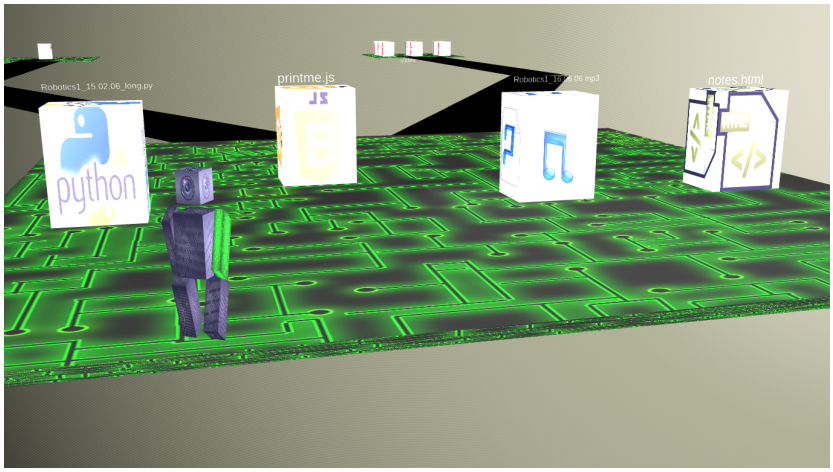

Figure 5: Agent

You can travel all around the world, but you cannot fly. If the agent is outside the ground, or outside the connector line, it will fall down (*figure 6, figure 7*), and will appear a game over window.

The agent is like a virus that destroy everything it touches, with its green lightning arm, from the inside. When the agent gets too close to a file, it put up its right arm (*figure 8*), and smashes on these file. (*figure 4*).

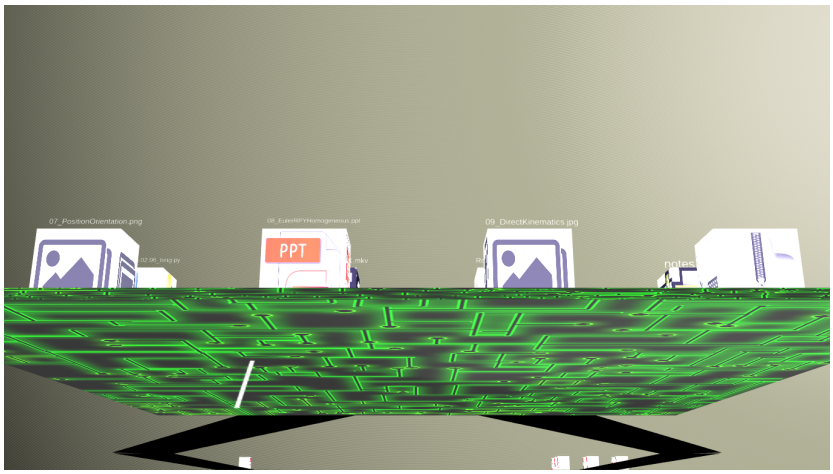

Figure 6: Falling agent, side view

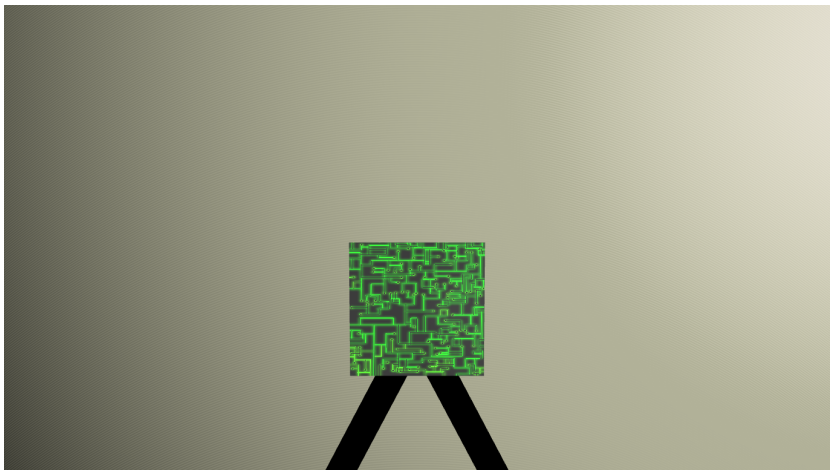

Figure 7: Falling agent, bottom view

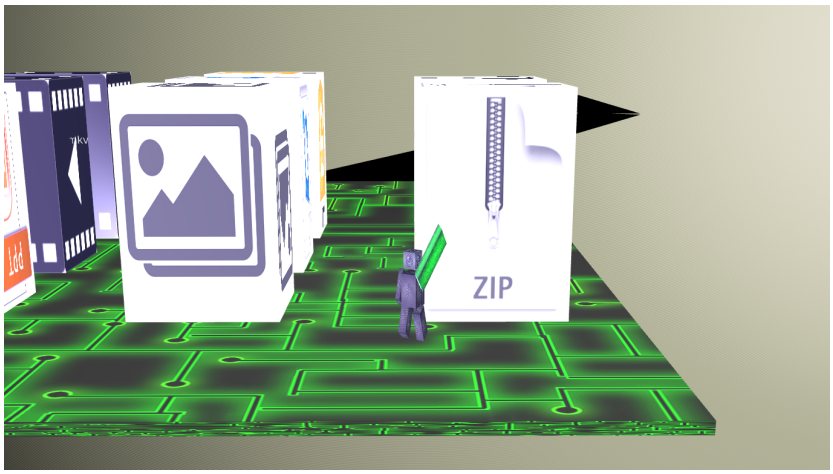

Figure 8

4 Game Over

When you fall down, after few secondos, you die.

Figure 9: Game Over