

# Fast and Curious

Game Design Document

Beta Version



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Mindelo - Cape Verde, november of 2020

## Index:

Story.....	pag. 3
Part 1- Introduction .....	pag. 3
Part 2- The game .....	pag. 4
Gameplay .....	pag. 5
Characters .....	pag. 6
Controls .....	pag. 8
Sounds	
.....	
..... pag. 8	
Camera .....	pag. 9
Game Universe .....	pag. 9
Enemies .....	pag. 10
Interfaces .....	pag. 12
IA	
.....	
..... pag. 14	
Notes	on
Game.....	the
pag. 15	
Chronogram .....	pag. 16

## **History:**

### **Part 1- Introduction:**

In the year 2116, Dr. Digitron, renowned scientist, made a great advance in the field of physics by discovering a key concept that would allow the construction of the greatest invention ever seen and desired in all of human history: the time-machine!

Excited by the discovery, the planning and construction of this fantastic machine began. It took 4 long and exhausting years, and finally, at 2:33 pm on September 13, 2120, Dr. Digitron did it! The time machine was finally ready! Even if it was late in the night, and he was very tired, our Dr. did not give up hope. He wanted to see the fruits of his work. He entered the machine and wrote the date "7/3/2100 - 4:00 pm" (the date he received his first Ph. D). Instants after the machine began to vibrate, and with each passing second, the machine vibrated more and more. At the beginning the Dr. was preoccupied, but he realized that, in the end, he was about to travel in time. It was not like walking in a park, and turbulence should be normal. Lights began to orbit around the machine, gaining speed. Suddenly a force seemed to pull back the Dr., however, he noted, his position on the machine had not changed. What was moving was the aspect of the world around him. Everything seemed to be getting stretched, the world was shaking aggressively and the lights were shining brighter than ever before. Every second seemed like an eternity, but finally that hell ended. Even if he was confused and stunned he searched for the nearest window and saw what was outside the time machine. In the beginning it was difficult (due to the effect of the intense lights of the travel) but his eyes became progressively accustomed and recognized what Earth was, 20 years ago. He made it! Finally!

Suddenly, an alarm bar started and on the computer terminal of the time machine appeared the text: "Critical Error!!! Protocol: Home Return - Activated". The happiness on the Dr.'s face was quickly replaced by terror. He was barely able to put on the safety belts, before the return trips had already begun. Lights, vibrations and spatial distortion are now added to the alarm bar for the only company that Dr. you go unplanned and repent return journey. Dominated by headaches caused by traveling twice in a short space of time, or Dr. I know the machine and I don't know. You just have time to see the time machine illuminate, vibrate and finally implant rapidly; before you lose your senses. To match the next day I thought that everything left was just a dream. But I realized that it wasn't. The year in which he returned was not his present, nor his past. I left something wrong. The world was ruined. His invention has created a spatial-temporal uniqueness that for a while has destroyed humanity and destabilized the Earth.

About Dr. Digitron did not give up. Motivated to remedy the situation, discover the time machine error (which was nothing more than a calculation error to make a tangent integral of a function), and start creating a new time machine. Thus you will be able to return to the present and prevent everything from happening

## **Part 2- The game:**

Dr. Digitron has just created a first version of a machine at a reduced time. The problem is that this new time machine is flawed, too fast to be able to make a trip of years in time. To improve it requires specific "components" (no game called "parts"). These components are special materials made with nanotechnology. It is very difficult to do things without hardware. The only way to earn these components is to collect what no longer exists, spread out to the world. The problem is that the world became a dangerous place during the apocalypse, walking through it is not an option.

About Dr. created a special car to be able to move safely around the world, looking for components. This car is endowed with artificial intelligence to control its movement on the road and to perform the management of the car's energy resources. Although robust, this car is not indestructible so, to prevent inconvenient events, Dr. dotou the car of an energy field (activated only when energy management is at maximum efficiency) and install the new time machine directly in the car. This way, in case the resistance of the car reaches zero, the car activates the "Back-Home" protocol and makes a trip in time to return to the moment before the car leaves the base to procure components, thus preventing it from being destroyed.

Of the various types of obstacles encountered along the way, there is still another obstacle between Dr. and his objective. When installing the time mini-machine in the car, the uniqueness of time-space (created by the first time machine) is achieved by this. This action follows the car without rest, as long as it stays active. How much closer the whole car consumes, the more energy it consumes, the slower it runs. The whole thing won't stop until it absorbs the second time machine, and it works stronger every time the time machine in the car is improved.

Alternando as suas saídas da base entre **de Missões melhoria da IA** (que aumentam o nível do carro tornando-o eficiente) e **Missões de procura de componentes** (onde é colecionar o foco principal em componentes), Dr. finalmente tem o material necessário para cumprir a missão final: **Jornada para o presente**, que destrói a singularidade espaço-temporal que o perseguidor finalmente viaja no tempo para evitar toda a destruição que causou.

## Gameplay:

The game is the adventure that Dr. Digitron is complete to be able to improve its time machine, improve the IA of the car and collect components, even to be able to remedy its error (which caused the destruction of the world). The game ends when the time machine is finally fast and completes the final mission: Back to the present (No game called: "Back to the Present").

The player has the role of IA that Dr. Digitron developed. Improving their skills, in terms of the requirements that the game requires, translates into an IA improvement. Thus, an improvement in the player's ability is an improvement in the efficiency of the car's movement and its energy management.

Depending on how chosen the player has different criteria to satisfy. In the "**Mission: Parts**" mode the player has as the main objective to collect the maximum possible components in a specified time just according to his ability (most ability of the player, the game does not keep the car's resistance above zero). Already in the mode the player has "**Mission: AI**" 60 seconds to meet the required level at the level at which it is met, except that it maintains more than zero car resistance. In the last mode the goal is to improve the IA of the car, but also the components are collected.

At the end of each mission is shown a summary of the game, in this summary you will find the average energy that the car produces during the game, the components it collects, the average speed of the car and other fields that respect the abilities of the player (which will be discussed in more detail before). In **case an AI** Mission is shown the resistance of the car and the player meets or does not meet the requirements of the level. A **component** Mission is already being treated and the time the player is advised to maintain the car with a resistance above zero is already being treated.

The player, as seen before, has the goal to collect as many components as possible and to level up. To go up a level as long as you meet the requirements of the current level, the components are already collected during the game. At the end of each game the car needs maintenance. This is done automatically, but without a price. The price of each maintenance depends on your state. As much as damaged and without energy, more resources are needed to complete maintenance, and the resources in question are the necessary components. For each game, some components are retracted to enable maintenance. In this way, the player's compensation in terms of components is directly proportional to any of the fields referred to in the previous paragraph. These fields are: medium energy and resilient

resistance. This penalty system incentivizes the player to make fewer possible mistakes and increase their risk.

The current level of the game is the current level of the IA of the car. Raising a level means raising the IA level. With each level the car can be improved, and this is seen by a move in the same aspect of the car as well as in its attributes (such as resistance and energy). To improve the car does not just go up a level, you still have to buy a successful level using "parts".

The car must be moved vertically to avoid obstacles encountered on the road, and horizontally to avoid the space-temporal uniqueness that it pursues. With the improvement of the car, the whole becomes more attractive to him, and pursues with more vigor, so the ability of the player must increase along the level to be able to continue to be able to overcome it. The closer the car gets, the slower it gets. This affects his ability to overcome obstacles (which cause damage to him). Arriving very close, the whole process begins to damage the car.

The player is deprived if the resistance of the car reaches zero or does not meet the requirements imposed by the level (this final condition is only part of the mode **AI Mission**).

## Characters: The game does

not have many characters, and if you do, you can participate directly in the game (in terms of interaction). So some are part of the story, and we know it's there (because the game leaves you to understand), but in the game you can't see.

Follow a list of characters that make up the game:

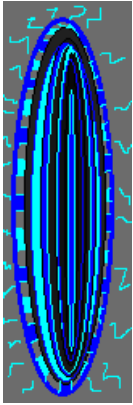
### Dr. William Digitron: In the first



place we have the first character introduced into history, the character who gives a start in the idea behind the game. About Dr. Digitron, as previously mentioned, is a renowned scientist whose genius has been made to accomplish great deeds during his lifetime. Most of them had their last invention, and because of all the problems they are now obliged to face.

For him intelligence is not a privilege, but a house, that must be used for the good of humanity. This way of thinking turned out to be someone very dedicated, responsible and humble. His only mistake was to let his curiosity pass his prudence, and that was his dearest.

### Space-Temporal Singularity: This character



represents the main character of the Game. Teve origem when o Dr. Digitron used the first time machine, not knowing that it was corrupt. It is inevitably attracted by any source of energy similar to its origin.

Even though the main plot of history is not a source of damnation, nor is it a source of bad things. It's just a singularity that is second only to the laws of the universe. It has no conscience, it has no feelings, it has no objectives. She is.

### Automobile: Initial form



: Final form: This



car can be considered a character in the face of a tool, since it is the one that responds to the commands of someone who plays. Damage, Speed, Movement, Collection of “**parts**”, everything is done by the car.

It is more of an invention created by Dr. Digitron. This was done with the goal of protecting him from both sides of the world during his missions.

It has the special ability to travel on time in case of need, and to create an energy field around you, for short periods, when it is at maximum efficiency, to be able to move forward in front of avoiding damage.

Its operation is made by an Artificial Intelligence (also created by Dr.).

During the game your aspect and attributes are modified. This is done by stepping up and using components.

## Controles:

Este é um jogo que tem como objetivo ensinar e / ou Melhorar técnicas e boas Práticas da digitação or teclado com. As such, the control that is on the car (seen earlier) is done entirely on a non -keyboard basis.

The player must digitize text or words (depending on how they are playing) that are displayed on the screen, to move the car.

The game will be the English language, so letters like “ç” and accents will not be found by the player in the text that you will be digging.



Digit at a higher speed defined by a level means to make the car advance, or vice versa to make the car reset. Digit correctly to make the car keep its speed (it is in the x -axis as in the y -axis). Ambas componentes (speed and precision) are required to pass the next level and/or to maintain the highest possible automobile resistance.

## Sons: The

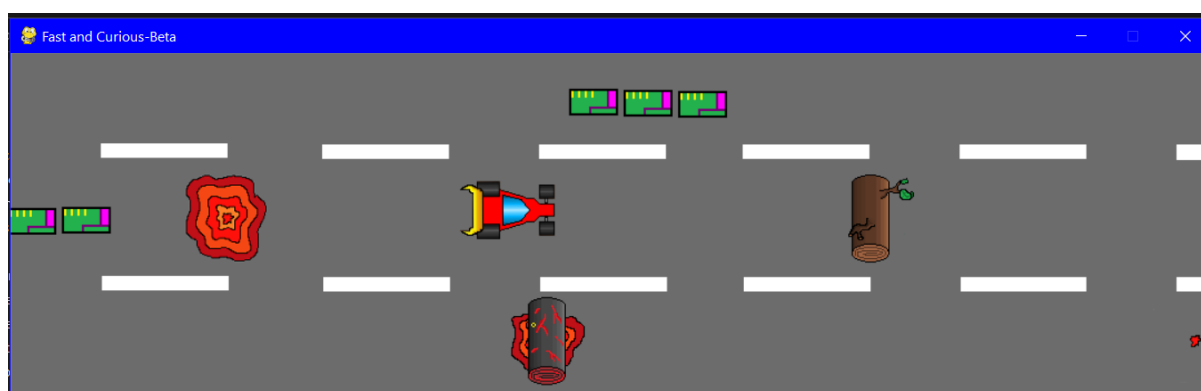
sounds of the game are not yet selected. It was decided to leave this part of the game for when everything is still working (Menus and game), this method has a better idea of what types of better sounds will work to create a cool climate for the game (already in terms of effects , as in terms of music).



## Camera: The game

camera does not move. The game is always displayed in the same position relative to the player. This mode, the player moves off the screen, and the remaining objects as well, but the camera remains fixed. The game is displayed from top to bottom and always displays the same amount of the game universe.

Visualização do jogo da perspectiva:



## Universo do Jogo:

O jogo passa-se em um hostile world cheios e os anos de perigos dentre 2080 2115. Or e que o jogador vê onde é uma realidade singularidade a space-temporal desestabilizou a Terra. There is Lava on the road, racks that form on the road, trunks of trees that can catch fire that are stuck in contact with lava, old abandoned cars and animal skeletons.

In some cases, there are various types of "components" that the player will be collecting when entering into contact with them.

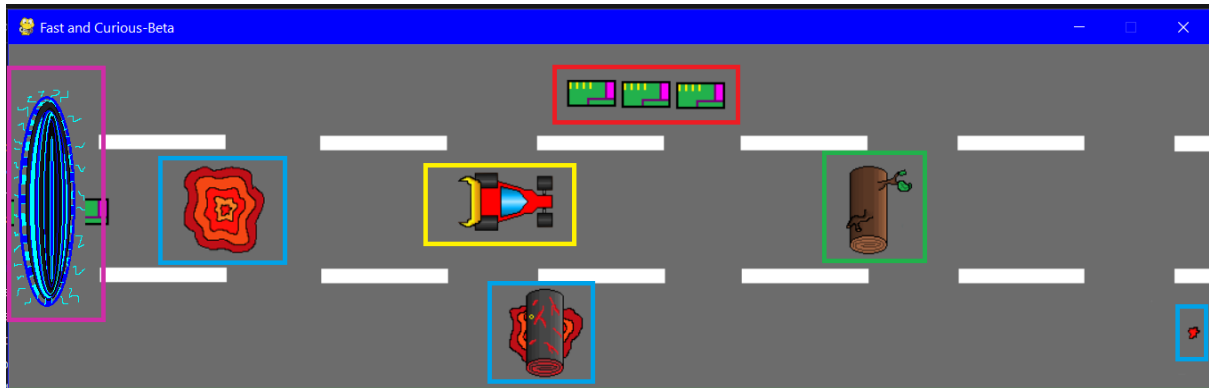
From phase to phase the stage does not change (if we do not compare the car, which can be improved). What makes each level different are the requirements that each level meets the player and the difficulty that this factor brings. This is not to say that each level is exactly the same as the others in terms of appearance. Each level is done randomly and during the preparation of the level. Materials (such as those mentioned in the first paragraph of this chapter) are fixed and retained as necessary to create the effect of automotive advancement.

To give a "life" effect, some of the obstacles are animated (for example the trunks that are burning). This way the atmosphere is more active and emotional. Also, the "components"

are flattened at regular intervals for all the tracks that the car drives, and they move along the road with an inverted effect.

The music used for the levels must have a dramatic and mysterious nature, but it conveys a certain excitement and humor.

Legend of the visualization of the game universe:



Amarelo: player controlled car;

Blue: animated obstacles;

Green: static obstacles;

Lilás: space-temporal singularity;

Red: "components" (called "**parts**" in the game ).

## Inimigos:

No jogo published diferentes tipos de dois inimigos: os ea singularidade obstacles. Each has a different way of causing damage and making it difficult for the player during the game.

### Products:

Animal skeleton, trunk, old carriage, dried trunk, lava, leather trunk.



In the game there are many obstacles during the course that the car traverses, some are graphically static (always have the same appearance) and others are animated. Independent of this factor, they all have the same effect and work in the same way: They are created and

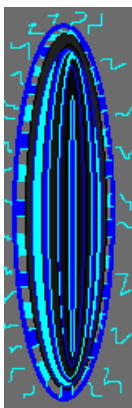
positioned at semirregular intervals for the purpose and in case of contact with the car they cause damage.

They are automatically controlled by the car, because, in order for these to be avoided correctly, the player must record correctly (without committing many digital errors) and maintain the second type of identity: singularity.

Overcoming obstacles does not make you win anything directly, but allows the player to keep the resistance of the car intact, and this is essential to be able to continue the game without losing.

This type of inimigo has no behaviors and no special skills. There are events or material objects that will appear in the process. It has little effect on reducing the resistance of the vehicle to contact.

### **Space-Temporal Singularity: This**



inimony has been introduced previously. In the game he was stuck in a forgotten song. This enemy cannot be overpowered, but barely avoided. Avoid it means that the player writes at least 80% of the speed set at the current level. If the car starts very close to the start it will be slower and consequently it will be more difficult to avoid obstacles. If it gets very close, it doesn't just happen more slowly, as it also starts to receive money (which increases each time it gets closer).

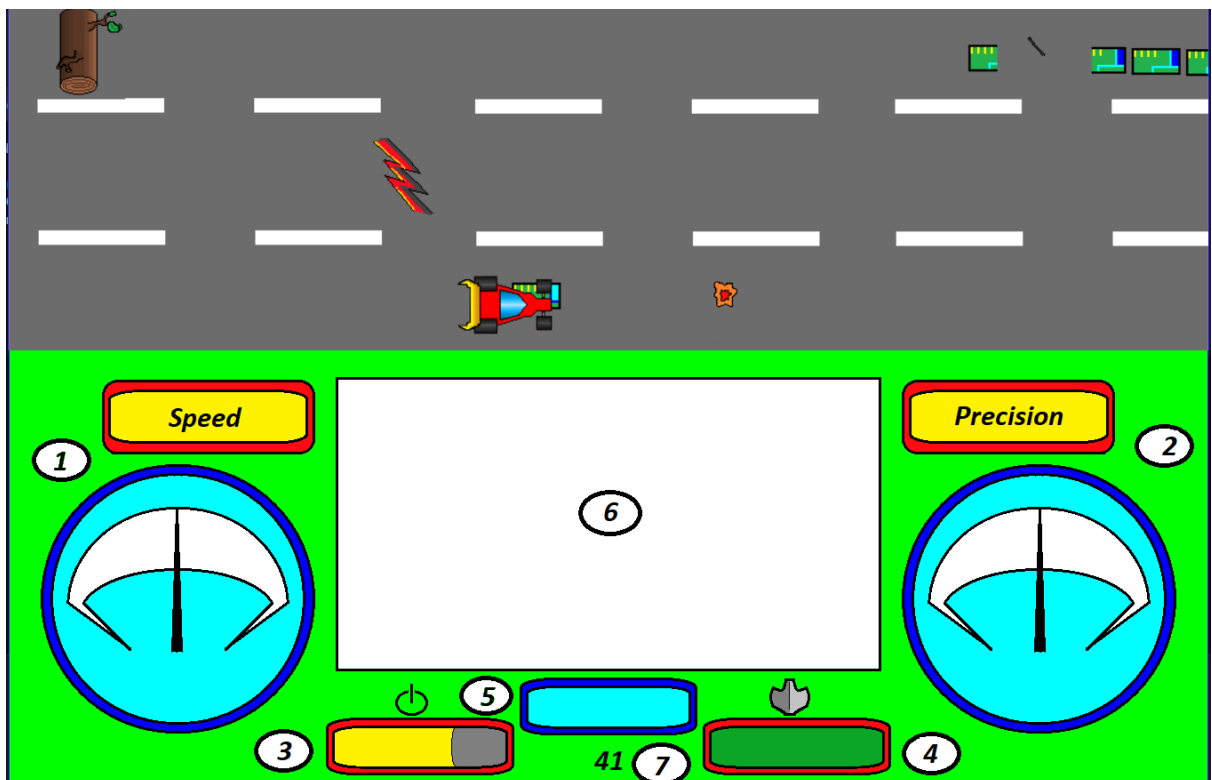
As with the obstacles, the player does not gain anything directly to get away from singularity, barely receives a reward and in addition it is not more difficult to get rid of the obstacles (which cause even more money).

It is only possible to turn this enemy into ending the game, already this means that Dr. Digitron was able to turn back to the Present and prevent it from being created.

## Interfaces:

### HUD

interface: The HUD interface of the game will be located as a single block in the lower corner of the game screen. In this block you will find all the information related to the current game important to the player: Number of components collected (5); Speed (1); Precision (2); Remaining time (7); Energy (3); Resistance (4); Text to be digitized (6);



### Game start cloth: This is the

first cloth that appears when the game is opened. It is visible for a few seconds and then it is replaced by the Home **Menu**.

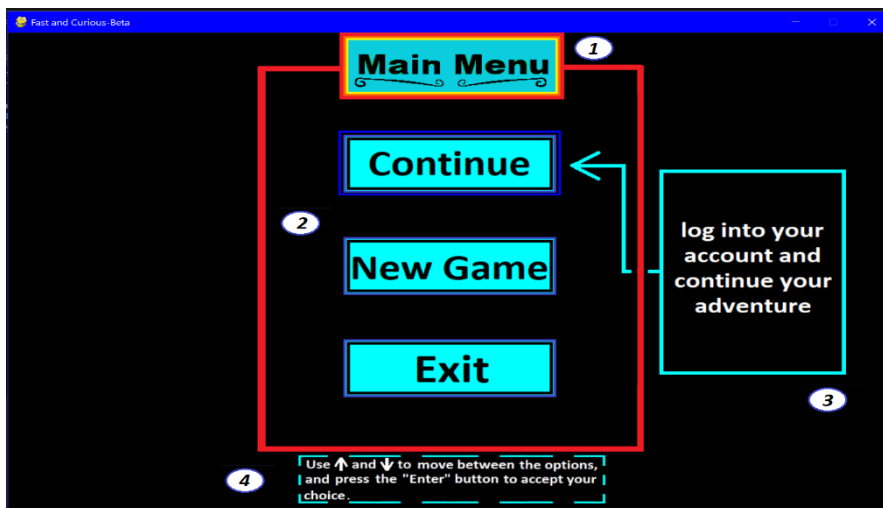


**Design:**

Menu Although the different Menus of the game offer different functions and some show more information, they all have a similar design.

The Menus have a centralized rectangle in the upper part that contains the name of the current Menu, a central (vertically) section that displays the available options, a right part that contains a window with information about the option in the back, and a lower part that contains information on how to navigate to the menu and select the deselect option.

To make it clear which of the current Menu options will be selected by pressing the "Enter" button, two techniques are used: Fishing contour effect, and a set.



1- Menu Name; 2- Options; 3- Information about the option; 4- Navigation information.

**Menu:**

Este é o primeiro menu. Provides the options to login to an existing account (“Continue”), Create a new account (“New Game”) or (“exit the gameExit”).

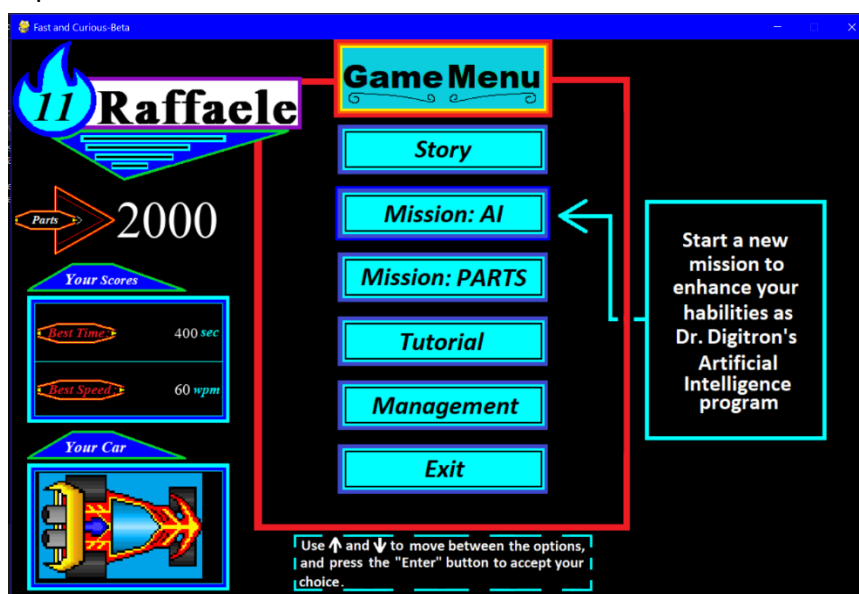
You can see the appearance of this Menu in the previous image.

## Game Menu: This

menu is displayed each time you log in to a game account. There are options to read the story of the game ("Story"), to play in both game modes ("Mission: AI", "Mission: Parts"), enter a menu with options with the goal of learning concepts that you can will not be obvious or clear ("Tutorial"), enter a menu that allows you to customize some aspects of the account account ("Management") and an option to exit the game menu and return to the Main Menu ("Exit").

Additionally this menu displays information about game statistics and accounts, not to mention. This information shows the player's name, his level, the longer the player was alive ("Best Time"), the best speed ("Best Speed"), the number of components available ("Parts"), and the car atual ("Your Car").

Aspect of the Game Menu:



## IA: In the

game an Artificial Intelligence is implemented to move the car second or second and, making it possible to avoid obstacles that will appear in your course during the game.

This artificial intelligence is formed by a simple "neural network". The car can "see" 5 pixels distributed around your circuit, strategically. These pixels are the "inputs" of the neural network. Each input has its "weights" and "bias" and they are all tied to the "output" neuron that uses the "tanh" function (the "activation function" of the "neural network").

This model was trained by genetic algorithms. The success criterion ("fitness level") of each individual was divided into two parts: life span (80%) and collected components (20%).

The result satisfies the basic requirements for the realization of the game, but with the extreme simplicity of the model, the behavior that the IA imposes in the car is extremely simple. The IA does only the minimum necessary to make the car get rid of obstacles.

## Game:

### **Notes**

**Note 1: The** language of the game will be English. This decision was taken to make the game development process simpler. Creating the game in Portuguese is possible, but it takes more time to include some literary components that are not used in the English language (such as accents and special letters such as “ç”). Given that the scope of the discipline does not require this level of complexity, it costs time to implement these components in an isolated form (but can be included in a day).

### **Note 2: This**

GDD does not include details about any features that are available in the game, and does not represent the final quality of the game. It only serves to give a more general idea than what is currently being implemented, in relation to what was said in the project proposal.

Some ideas are still being discussed, others are being altered, and others are being added. This is also true for graphics and sounds.

In the final document will be all the features that are not included in this document.

### **Note 3:**

All graphics in the game have been created from zero by the program “Paint” (to make drawings) and “Pixel Art” (Online tool used to remove the foundations of images). No images were retrieved from the Internet or made on third parties.

## Chronogram:

Data de inicio							Currently working on it
Dezembro			Janeiro			Present	

tarefa	Inicio	Meados	Final	Initiation	Meados	Final		Progresso (%)
Planning Game Concepts	X							100
Implementing IA	X							100
Training IA	X							100
Create Game Graphics	X							100
Create Menu Interfaces	X							100
Create Game Classes	X							100
Tests and debugging		X						100



Create the GDD		X						100
Implement the Menu		X						100
Insert elements in the game		X						100
Implement additional functions		X						100
Implement command/input system								100
System			X					100
Escolher os sons do jogo				X				100
os sons Inserir no jogo				X				100
Realizar e Testes identificar bugs do Jogo					X			100
Jogo or Apresentar						X		100
Game Refination							X	70