

2 Never-lose

The aim of this project is to build a system that can play Google Chrome's *dino* game autonomously (without ever losing of course). It's the game we have all played at some point when there were no more internet connection. You can play it by opening a Chrome browser and typing the following URL. When you press the spacebar, the game will launch. Your *Never-lose* system should :

1. use the photoresistors to detect incoming obstacles on the screen ;
2. use the servomotors to press the spacebar and the "down" arrow.

You can attach the photoresistors to your screen with some duck tape, the servomotors should be taped to the keyboard or held down with some weights to ensure that they don't move when pressing the computer's keys.

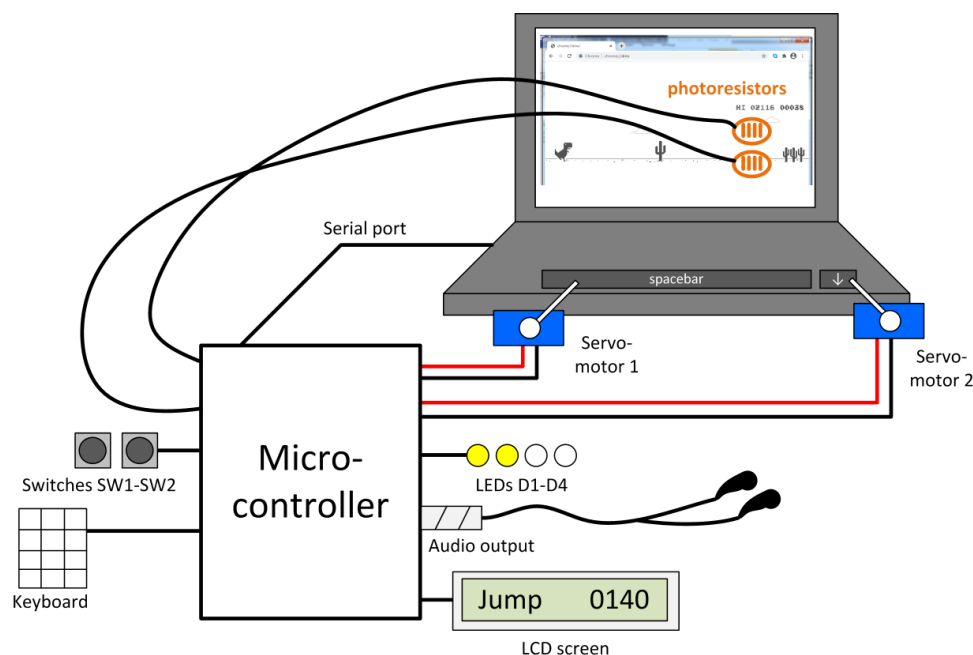


FIGURE 2 – Schematic representation of the never-lose system.

The inputs and outputs should be configured as follows.

- **SW1** : When pressing SW1, the servo controlling the spacebar should press the spacebar.
- **SW2** : When pressing SW2, the servo controlling the down-arrow key should press the down-arrow key.
- **SW3 and score counting** : When pressing SW3, the score should be reset to zero. The score should start increasing the first time the spacebar is pressed after resetting the score to zero (in the dino game, the score increases with 10 points per second). The score should be printed on the second half of the LCD.
- **LED1-LED2** : These LEDs should light up when the dinosaur is jumping.
- **LED3-LED4** : These LEDs should light up when the dinosaur is ducking.
- **Photoresistor** : The photoresistors should be used to detect incoming obstacles (one photoresistor for the ground obstacles, one for the flying obstacles).

- **Keyboard :** You can pick two keys of the microcontroller keyboard that should have the same effects as SW1 and SW2.
- **Serial port :** The user computer can send the “jump” and “duck” command through the serial port (for example for launching the game), which should result in the correct servo pressing the correct key. The microcontroller should also send the following messages to the user computer over the serial ports : “Jump” and “Duck” when the dinosaur is jumping/ducking.
- **LCD screen :** The LCD screen should print “Jump” when the dinosaur is jumping, “Duck” when the dinosaur is ducking. The second part of the LCD should print the score.
- **Audio out :** The audio output should emit one sound when the dinosaur is jumping, another sound when the dinosaur is ducking.

As a bonus, the following elements can be implemented :

- a system to detect when the day changes into night on the game ;
- ...