

# Instructions Manual of Chess Bras

-A Chess game with a special opponent: a robotic arm-

## 1. Chess Game

The following game is based on the popular game of chess. If the player is not familiar with chess, it is suggested that he informs himself before continuing the instructions manual.

Chess Bras is a training board with three different puzzle that can be tried. The goal of the game is to checkmate the opponent which is a robotic arm. More specifically, the robotic arm plays an algorithm called *Sunfish*.

## 2. Beginning of the Game

When a game start...

First, the player needs to choose which puzzle of the three difficulties he wants to try. To do so, he must enter on the keyboard 1, 2 or 3.

Secondly, the player must be certain that the chess board is correctly setup. If not, the player must setup the board as the puzzle he chose indicates.

Lastly, the player must wait the signal to start his turn. The colors on the LED will be blue when the code is setting up. When the LED turns green, the player can start the game by pressing one time the bouton on the board game. Then the player can execute his first move.

## 3. Player's Turn

When it's the player's turn...

First, the player must wait the signal to start his turn. When the LED turns green, the player may play.

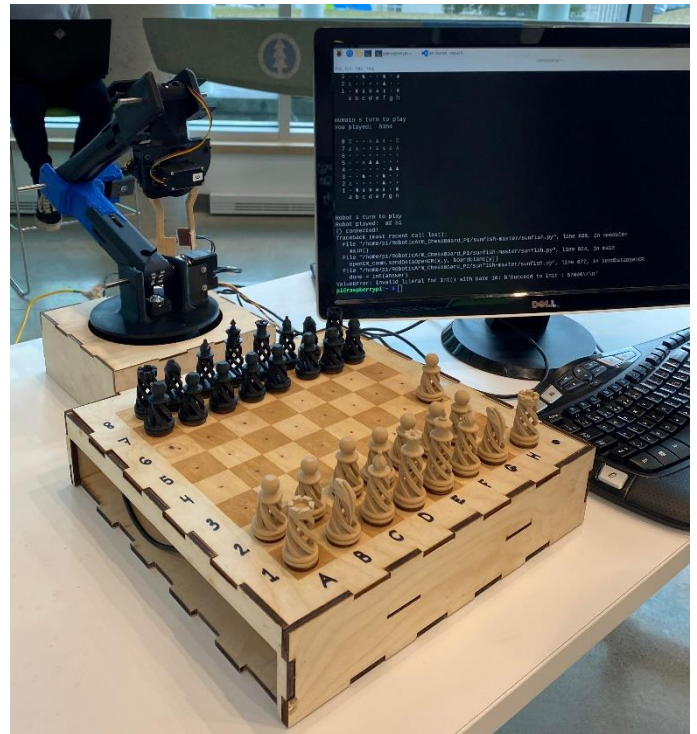
Secondly, when the player finished his move, he must notice the robot. Do to so, the player must press the button on the right corner of the board.

Lastly, if the LED turns blue, nothing more is needed from the player and his turn is over. If the LED turn red this indicates that there is a problem. To solve the problem, the player can consult the list of potential problems in section 5 of this document.

## 4. Robot's Turn

When it's the robot's turn...

The player is not required to do anything. The LED will turn to a light blue. This means that the robotic arm is playing. While the arm is playing, it is important to be out of his way. The arm will



first check what moves he's going to make. Afterwards, he will move his chess piece to the right location. This might take a few seconds.

## 5. If a Problem Occurs

### 1- Does not recognize your move

When it's the player's turn, it can happen that the board does not detect the player's moved chess piece on the first try. After the player pushes the bouton to end his turn, the LED will just stay green, as if it were the player's turn again. In this case, the player's move as not been considered since the LED indicates that it's still you turn.

Solution: The player can try to put his chess piece at different locations within the squared space where he moved his chess piece. If it does not work this means, there is a problem with the detection of the magnet or the switch underneath the board.

### 2- Move is incorrect

When the player moves his chess piece to an illegal position, the LED with turn red indicating that there is a problem with the move.

Solution: The player must redo a legal move. After choosing a legal move, the player can repush the button to let know the robot of his new move.

## 6. How to Win

To defeat the sunfish algorithm, the normal chess game rules apply. The player must check mate the robotic arm, more precisely the sunfish algorithm.

When you have successfully check mate the opponent the LED will turn into party mode. Party mode will light many different colors for about 10 seconds.

## 7. LED significations

The RGB Led indicates the different states of the game

- **Start:**  
a bright **blue** LED will appear
- **Human's turn to play:**  
a bright **green** LED will appear
- **Robot's turn to play:**  
a bright **light blue** LED will appear
- **Problem:**  
a bright **red** LED will appear
- **You Lost:**  
the LED will **turnoff**
- **You Won:**  
the LED will turn on into **party mode**. Party mode flashes many different colors one after the other to indicate that you have won the game.