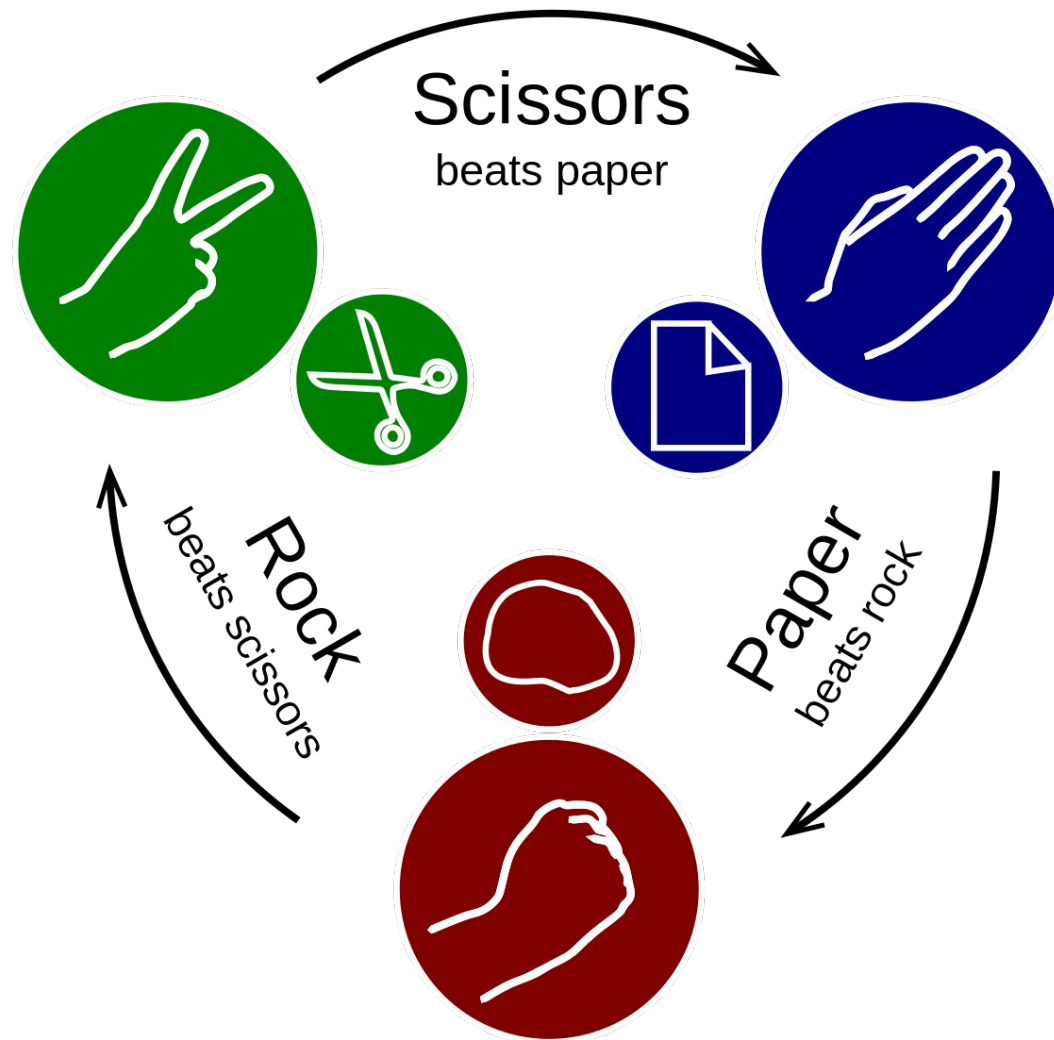


AI - powered “Rock, Paper, Scissors”

Study Week 2023

Tutor - Luca Butera

Rock, Paper, Scissors



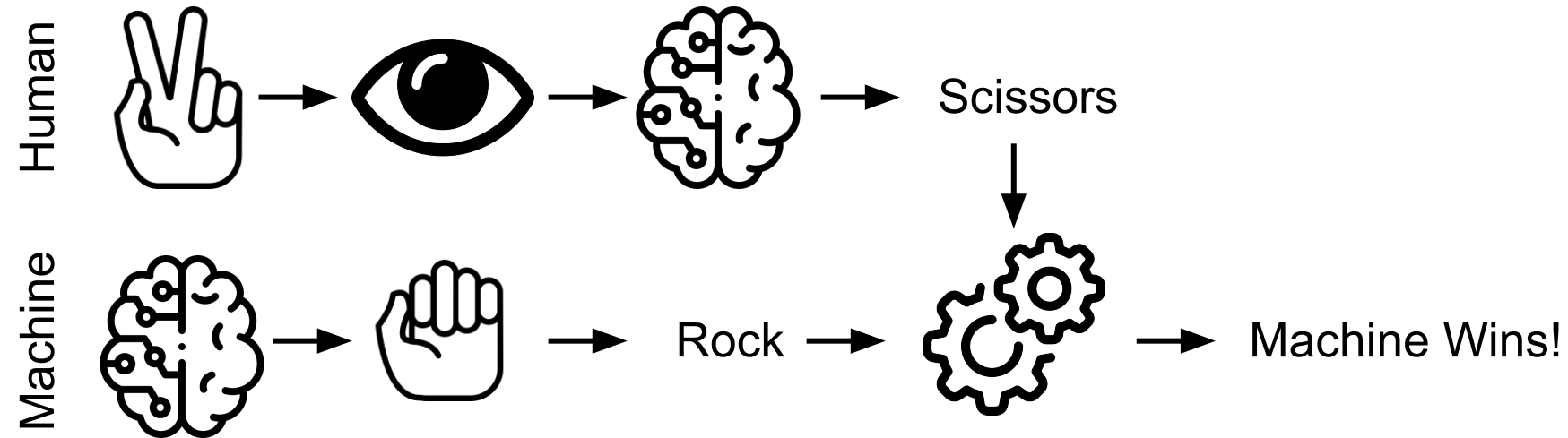
“Rock, Paper, Scissors” is a 2-player game in which, at each round, the players synchronously choose one of the 3 available moves described by a corresponding hand gesture.

Each gesture wins against one of the others and loses to the remaining one.

It is an ancient and widely spread game, tracing back to the 1600s in China.

We can easily play it against a friend, but **can we play against our computer?**

Playing against our PC



To play against our PC, so that we simply throw our move, our computer must be able to:

- **pick a move**
- **recognize our move**
- **decide who is the winner**

We can achieve these objectives through corresponding components we can program:

- **a decision algorithm**
- **computer vision**
- **a rule algorithm**

What and how?

To achieve our goals we will use **Python** together with some popular libraries for *machine learning* (**PyTorch**, **PyTorch Lightning**) and *computer vision* (**OpenCV**).

The **base objective** of the project is to build a **program that recognizes our move and plays at random**.

Then we might think of **improving our artificial player** by using algorithms that use our previous moves to predict our next ones and play smartly to win more.

Or we can implement **2-player mode**, in which both players are humans and the computer simply recognizes the two moves and selects the winner.

