**Evolution of Brain and Body**

Our koan’s group goal is to select a robot and make it evolve. We will change the parameters that controls the evolution for getting a robot able to perform the task it is programmed to in the better way. In order to do that, we will make different robots, in different stages of evolution, compete among them in several trials, each one of them will test a different capability of the robots. Once we have the results of the trials, we will give a final valuation about what kind of evolution is better. With that objective in mind, we started with a brainstorming about our project and two ideas came out.

The first one was to evolve a Braitenberg vehicle, a robot with the simplest form of behaviour based AI. It is an autonomous robot with basic sensors and wheels controlled by independent motors. Depending on how you connect the information received by the sensors with the movement of the wheels, you can change the behaviour of the vehicle.

Our idea was to evolve the type and position of the sensors and the motors, as the body of the robot, and the control algorithm that would receive the information of the sensors and activate the corresponding motors, so the behaviour of the vehicle would be evolving. There would be several vehicles that evolve in different ways, some of them giving priority to the body, others giving priority to the mind and others in which body and mind would evolve together. Then the robots would compete among them in some trials to see which form of evolution is better.

The second idea was to evolve a walking robot, the simplest walking robot we could think of. Evolving the body would mean to change the number and position of the legs and also the type and position of the different sensors, while the mind would be the control algorithm. Like the Braitenberg vehicles, several robots would evolve in different ways and then they would compete among them.

For taking this ideas to the practice, we have chosen Ludobots over Webots as the software we will use. Ludobots was designed for education in evolutionary robotics, so it will be perfect for our work. We considered using Webots because it is a more flexible program and would be easier to find help with any problem because there is more people working with it, but in the end, we rejected that software because is more complex to evolve the morphology of the robot, which is half our work.