

# IT3708: Project 3

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# 1 Requirements for compiling running the application

The project uses CMake, clang++, freeglut3, and the Boost libraries. On Debian systems, it should be sufficient to type

```
sudo apt-get install cmake freeglut3 freeglut3-dev libboost-dev-all freeglut3 freeglut3-dev
```

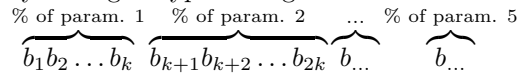
Then run ./init-cmake. That is also the script one would have to edit in order to use a different C++ compiler than clang++.

# 2 System description

In general, the genotype is represented by a **fixed-length** sequence of bit patterns. Each bit pattern is of a certain length  $L$ , encoding a number between 0 and 1. This number is computed by dividing the number of high bits by  $L$  to get the percentage  $p$ . The value  $v_k$  for the given parameter  $K$  is then given by

$$v_k = K_l + (K_u - K_l)p \tag{1}$$

where  $K_u$  and  $K_l$  are the upper and lower bounds of the parameter, respectively. The genotype is diagrammed below:



**In this project we use  $L = 8$ .** The class diagram for the system is in the appendix.

# 3 Verification of the ability to evolve catching agents

# 4 Verification of the ability to evolve catching and avoiding agents

High-fitness agents typically do ....

# 5 Significant modifications to the tracker scenario

The following modifications are made:

- Each block has a constant speed of -1 in the x direction (in addition to its normal speed in the y direction).

## **6 Attempted modifications to the topology**

The following modifications are made:

- 

## **7 Analysis of an evolved successful CTRNN**

## **8 Appendix: Class diagram (large version)**

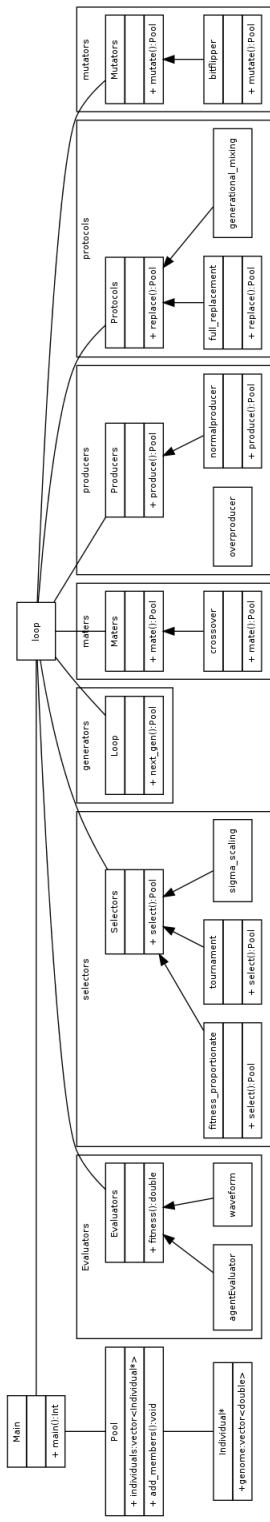


Figure 1: Class diagram