

## Predator – Pray Simulation

### 1.0 About

This project is to simulate the equilibrium between population of predators and population of pray in a ecosystem. It shows the relation between this populations and the changes in them through time.

### 2.0 Implementation

In the environment there are two kinds of animals foxes (yellow) and rabbits (green). A rabbit has unlimited food source and it contently watches for the nearby foxes. When a one or more foxes in its field of vision it runs away from them.

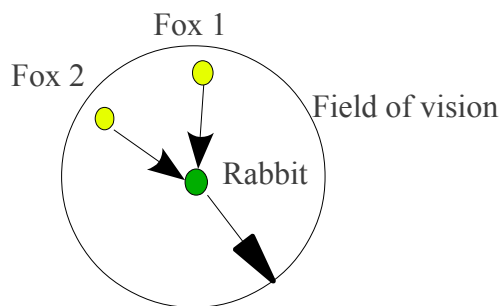


Figure 2.0

The foxes try to catch rabbits. A fox always runs behind the nearest rabbit. And it can only survive a certain number of steps without catching a rabbit. Both rabbits and foxes have a maximum speed and a breeding rate.

### 3.0 Running

This script is written in python. Install 'python' and 'Tkinter' to run the script. (use synaptic package manager in Ubuntu to install them) .  
use command ,

```
python pp_sim_main.py
```

You can change these parameters in the script to change the simulation,

- `number_of_rabbits` – initial population of rabbits.
- `rabbit_multiply_rate` – population of the newly bred rabbits as a proportion to old population.
- `rabbit_max_speed` – the max speed the a rabbit can run.
- `rabbit_range_of_vision` – the range that a rabbit can see.
- `number_of_foxes` - initial population of rabbits.
- `fox_multiply_rate` - population of the newly bred rabbits as a proportion to old population.
- `fox_max_speed` - the max speed the a rabbit can run.
- `fox_max_steps` – maximum cycles that a fox can live with out eating a rabbit

There is also a graph two populations. Red is for rabbits and blue is for foxes.

#### 4.0 Screen Shots

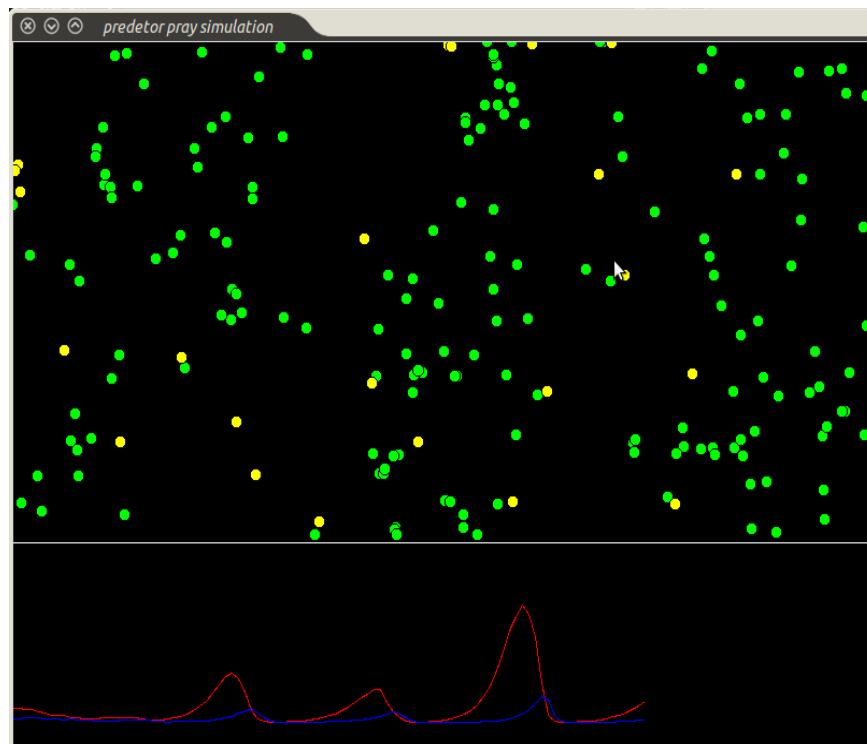


Figure 4.1

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