Birds Flocking

- Environmental Modelling -

Gohar Ghazaryan
Karina Popova

Introduction

Flocking behavior is the behavior exhibited when a group of birds, called a flock, are foraging or in flight. There are parallels with thresholding behavior of fish, the swarming behavior of insects, and herd behavior of land animals.

Applications

- The study of flock like behavior in humans

- The control of behavior of Unmanned Air Vehicles
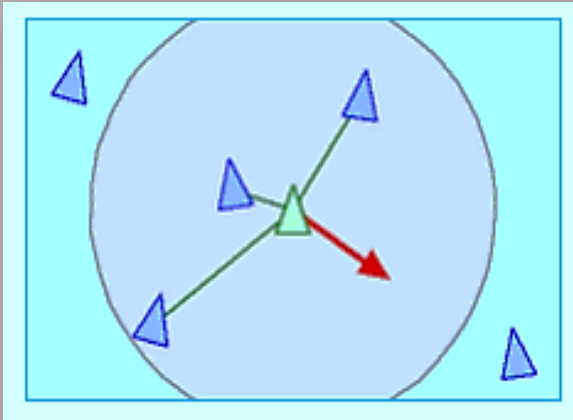
- Flocking was used in animation

  Batman Returns, The Lion King

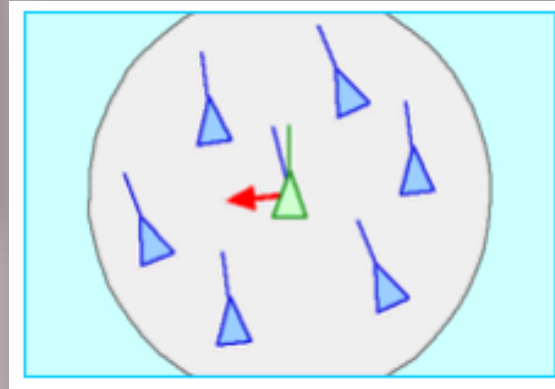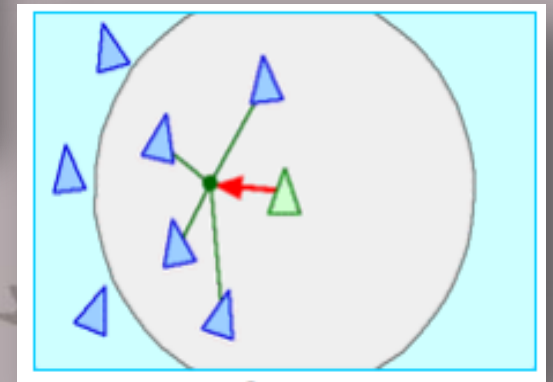- Automatically program Internet multi-channel radio stations

Behavior of flocks

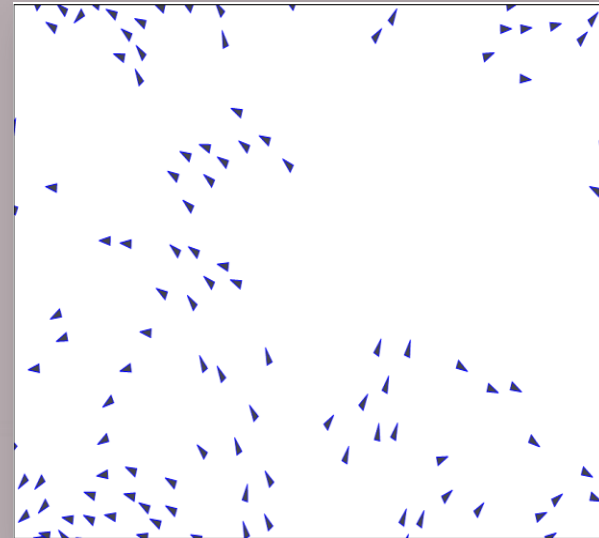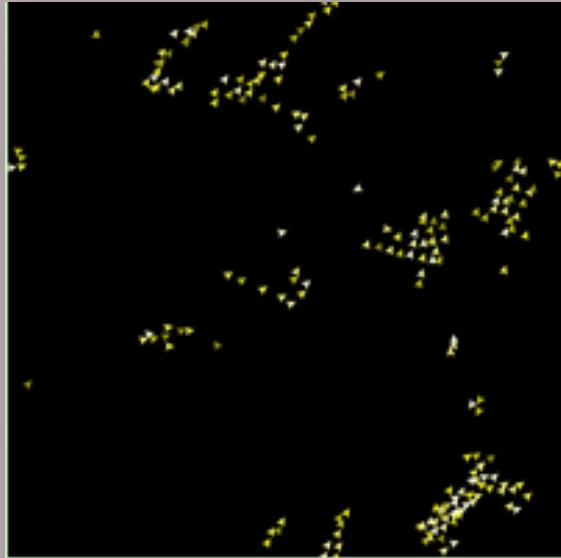**- Separation -**

- Alignment -

- Cohesion -

Similar implementations

NetLogo

Agent based modelling

- Agents that model intelligent behavior.
- The agents are usually situated in space and interact with each other locally.
- They usually have imperfect, local information.
- Often there is variability between agents.
- Often there are random elements

Implementation

- **CellularSpace**
- **Agent**
- **Society**
- **Timer**

- **Environment**
- **Legend**
- **Observer**
- **Utilities (forEachNeighbor)**

Results

When running the model it should be noticed that when the cluster close to the border birds change their direction automatically.
The model sensitive to some parameters. When the vision has lower value the clusters are smaller.
The change of the size of the cellular space effect the speed of movements.
The size of birds population also change the map of behavior.

References

Wilensky, U. (1998). NetLogo Flocking model. http://ccl.northwestern.edu/netlogo/models/Flocking. Center for Connected Learning and Computer-Based Modeling, Northwestern University, Evanston, IL.

Btuntage H. (2011) Neat algorithms-Floacking

http://harry.me/blog/2011/02/17/neat-algorithms-flocking/

Flocking (behavior), http://en.wikipedia.org/wiki/Flocking_(behavior)

Thank you for attention
and have a safe trip to home…