FLOcking Walkers (FLOW): Quick Start Guide

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1 Introduction

Unzip FLOW.zip in a folder of your choice, for example in C:\FLOW. With Windows Explorer go to C:\FLOW and double click on the FLOW-GUI icon. The following window will appear.

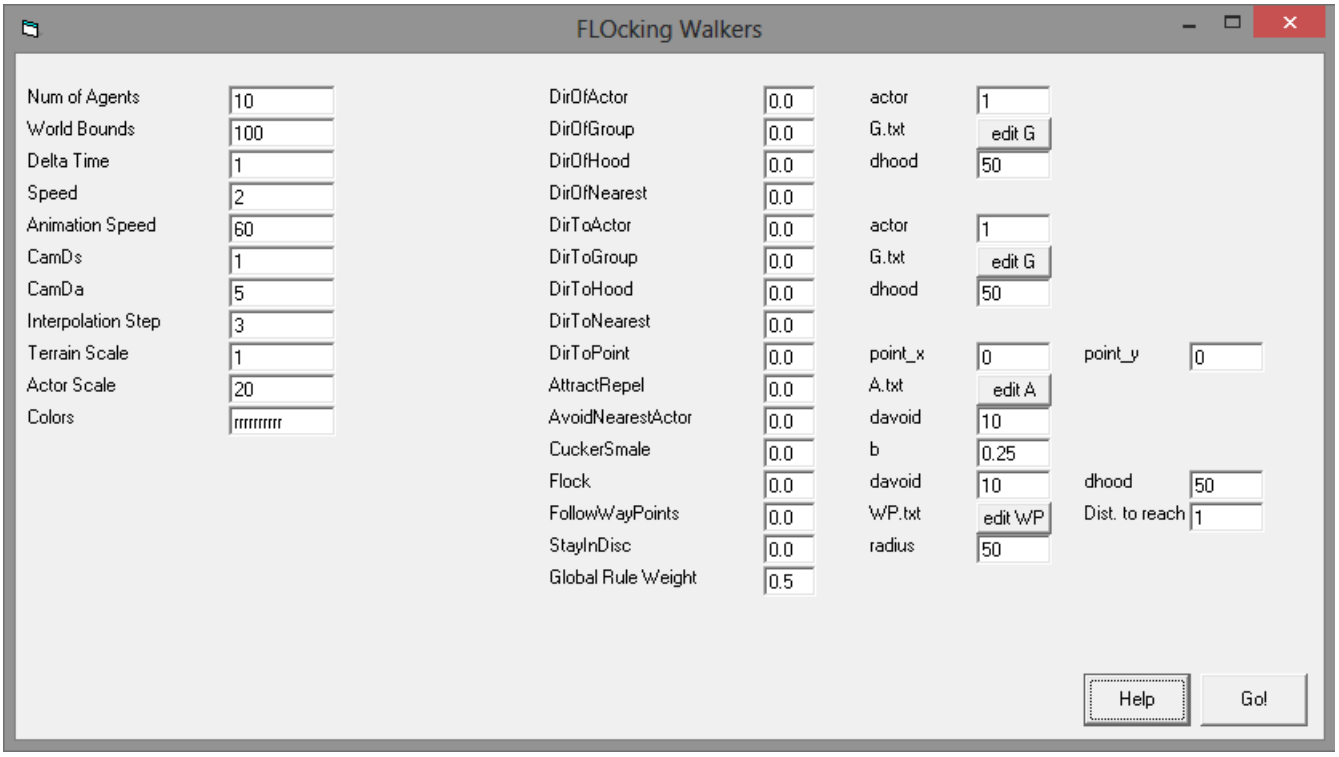

Figure 1: The FLOW GUI.

Go to the textbox labeled FollowWayPoints and change the value 0 to 1. Then hit the Go! button at the bottom right corner. After a few seconds the following screen will appear

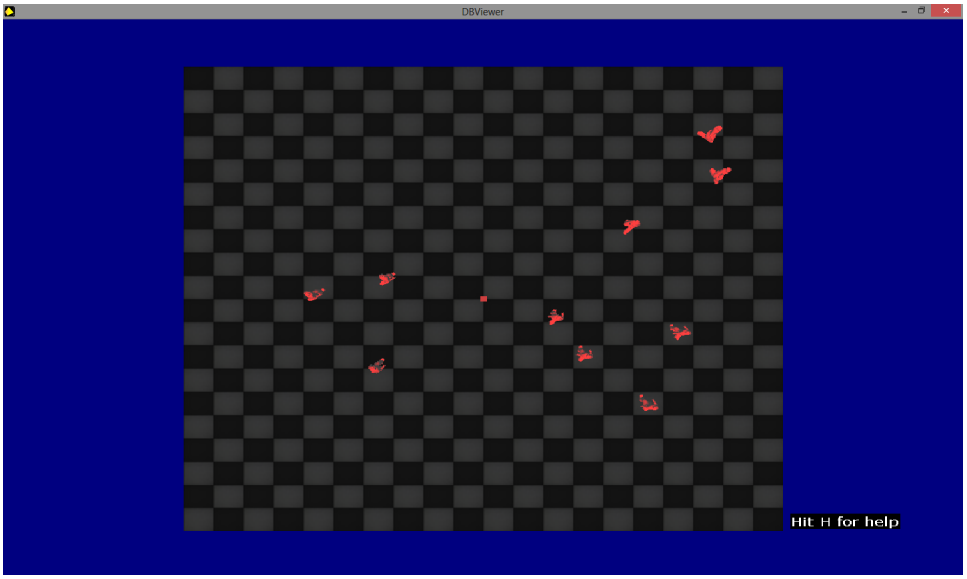

Figure 2: The beginning of the FollowWayPoints simulation.

and the walkers will start walking. In a short while they will line up and they will be moving in a formation like the one illustrated below, patrolling along the perimeter of a square.

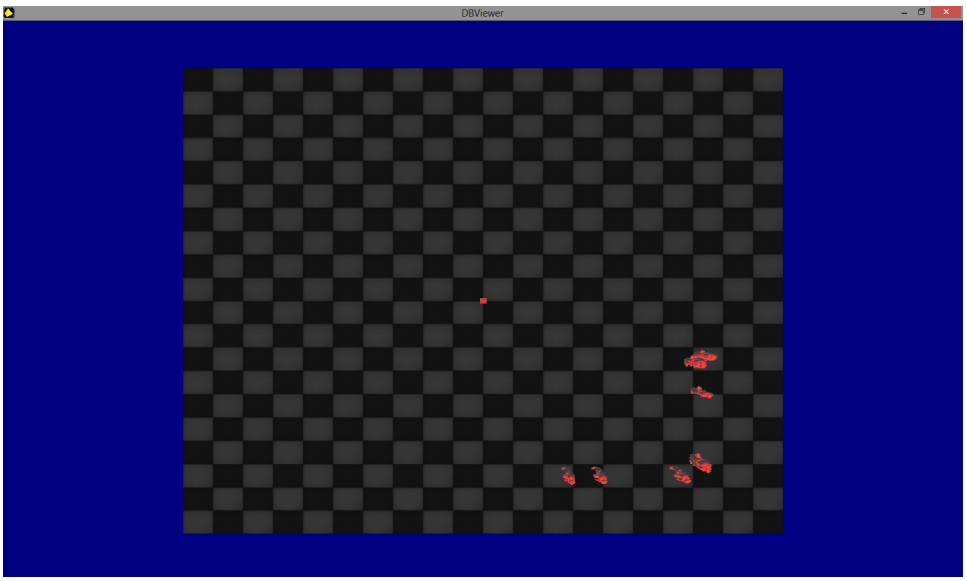

Figure 3: The evolution of the FollowWayPoints simulation.

You can look at the simulation from various points of view by typing any of the numbers `1-8`. The `Up / Down` arrow keys zoom the camera in / out; The `+ / -` keys move the camera up / down along the vertical axis. Type `h` to get a help screen; type `o` to go back to the simulation. To terminate the simulation, hit `Esc`.

2 Setting Up a New Simulation

The GUI can be divided into four areas, as seen in the following figure.

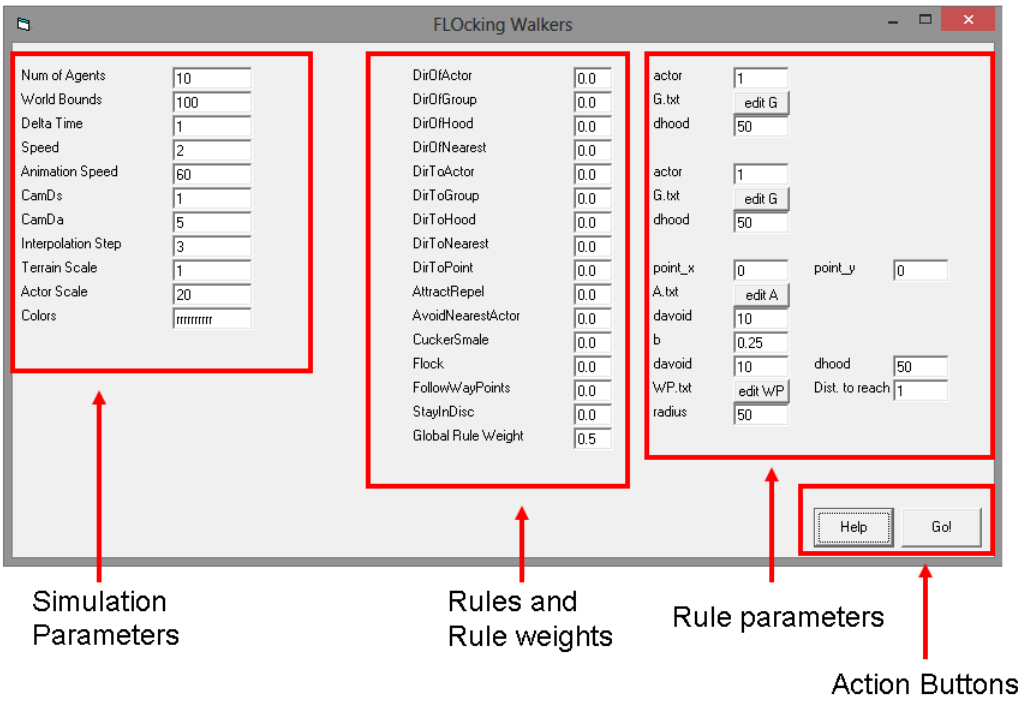

Figure 4: Organization of the FLOW GUI.

1. The first area allows one to set the parameters of the simulation. The names of the parameters are fairly self-explanatory. For example, Num of Agents controls the number of walkers. For a full explanation of all the parameters see the FLOW Manual, included in this distribution.

2. The second area is the most important one. It contains a list of **rules** which determine the behavior of the walkers. The user types the **weight** of each rule in the textbox next to it; the rules are combined in proportion to their weights (when the weight of a rule is 0.0, the rule is inactive). We will soon give some examples of rule combinations. For a full explanation of each rule see the FLOW manual. **IMPORTANT:** the Global Rule Weight must be in the range 0.0 to 1.0 for the simulation to give correct results; when Global Rule Weight equals 0.0, the rules are inactive (even if their individual weights are nonzero).

3. The third are allows the user to set additoinal rule parameters. Once again, some examples will be given soon; for a full explanation of all parameters see the FLOW manual.

4. The fourth area contains the *action buttons* Help and Go! which do the obvious thing.

Let us give an example of setting up a simulation. Make sure you have exited the simulation window (if not, hit `Esc`); the FLOW-GUI window should still be active (if not, go back to C: FLOW and double click on the FLOW-GUI icon). Set the FollowWayPoints weight to 0.0, the DirOfHood weight to 0.5 and the AvoidNearestActor weight to 0.1; also set the dhood parameter to 50 and the davoid parameter to 10; finally, set the Global Rule Weight to 0.5. Now hit the Go! button at the bottom right corner.

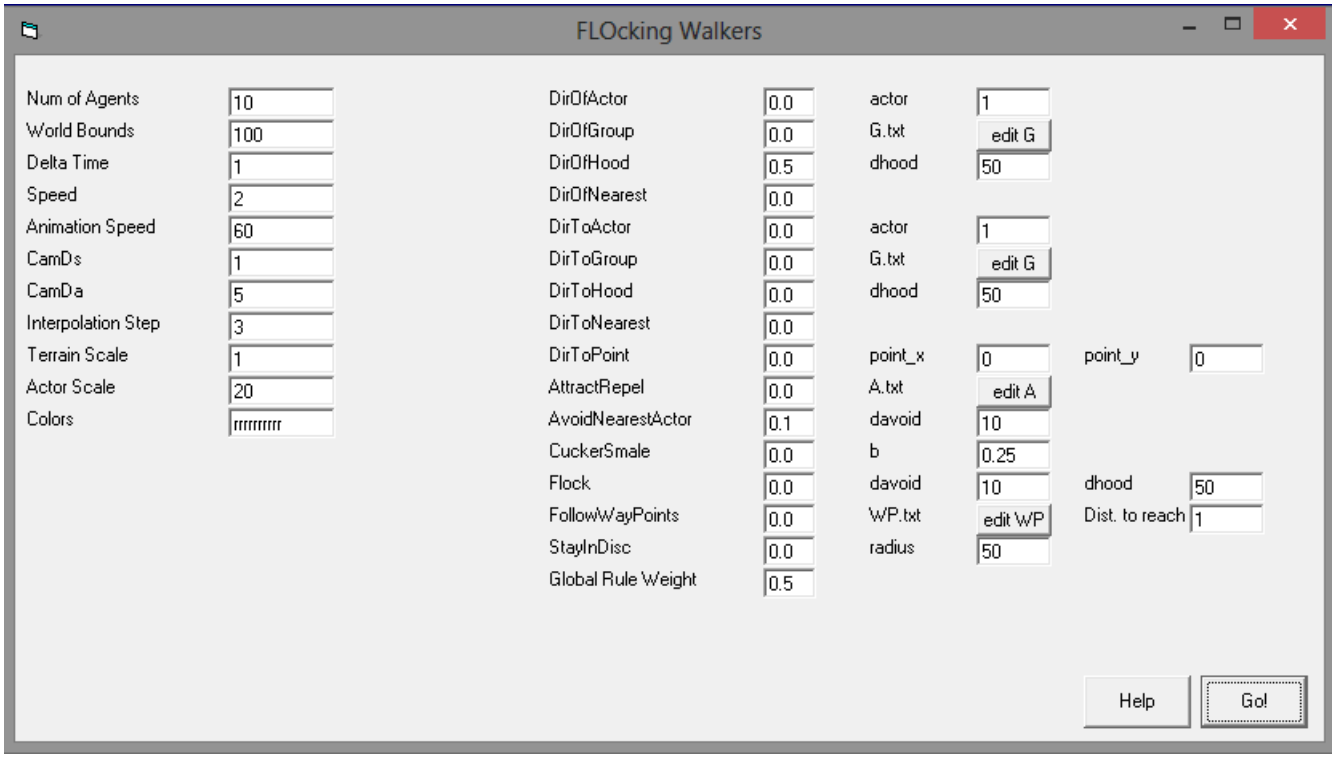

Figure 5: The GUI setup for the DirOfHood simulation.

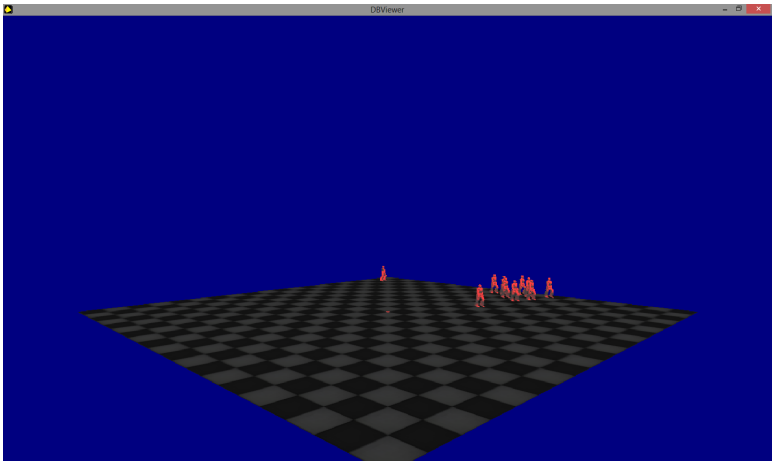

Figure 6: Boids-like behavior.

In this simulation the walkers have a "*Boids*-like" behavior, i.e., they tend to form up in a swarm, with all wakers having the same direction (the swarm direction). In the next figure you can see a snapshot in the middle stages of the simulation, when the swarm formation has set in.

Here is another example. Set up the the FLOW-GUI window to look exactly like in the next figure; in other words, set NumOfAgents to 5, AvoidNearestActor weight to 0.2 AttractRepel weight to 0.5 and the Global Rule Weight to 0.5. Now hit the Go! button at the bottom right corner.

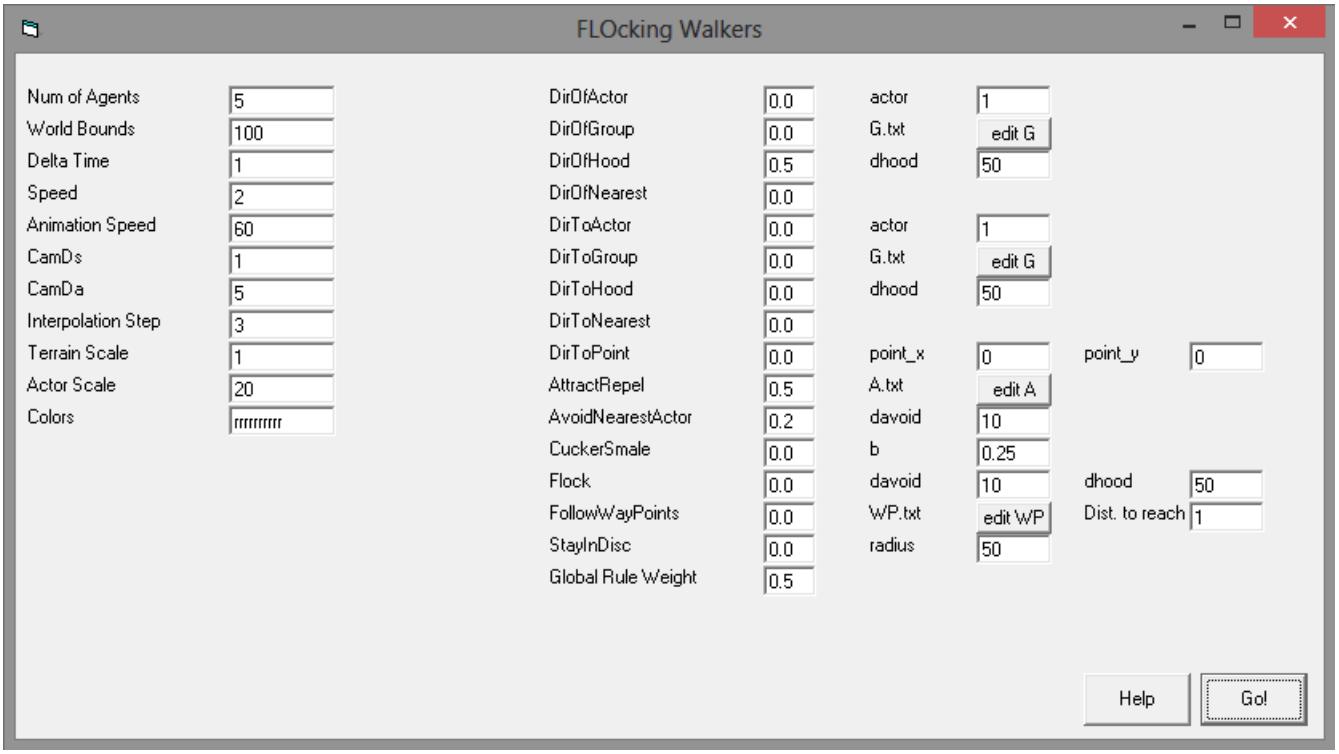

Figure 7: The GUI setup for the DirOfHood simulation.

When the steady state behavior sets in, one walker will perform a random walk and the remaining walkers will be following him. The picture looks like this.

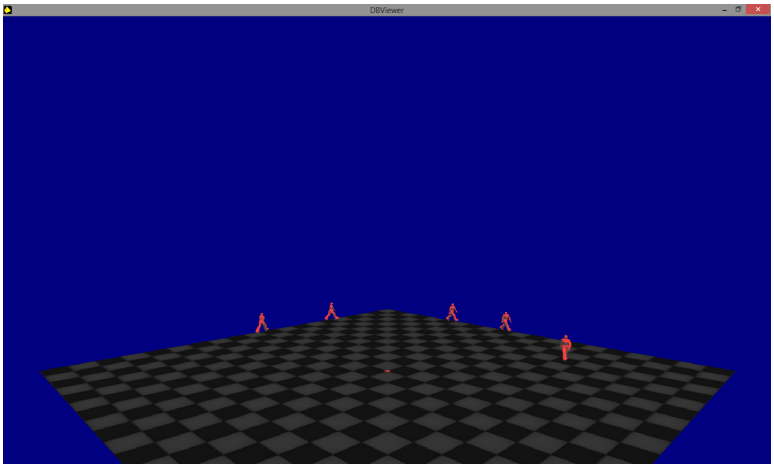

Figure 8: AttractRepel behavior.

3 Moving On ...

You have seen the basic elements of the FLOW application. To create more complex walker behaviors you will probably need to read more about the rules from which such behaviors are built. Now is the time to go to the file Manual.pdf which is included in this distribution. Have fun ...