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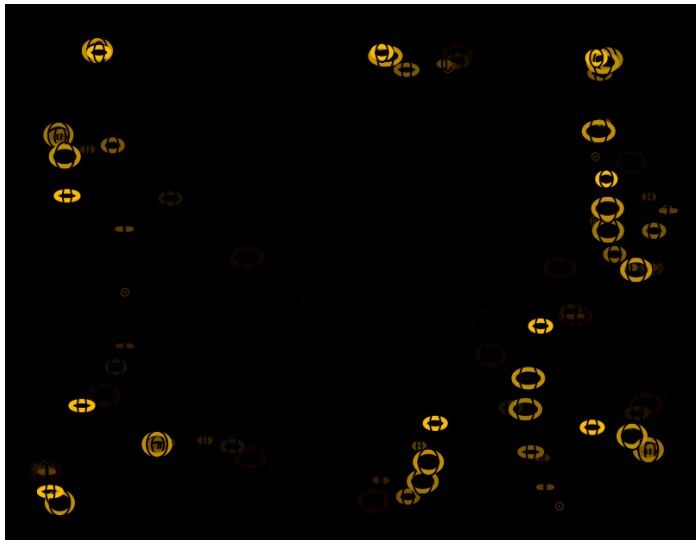
Phishies

Relating simulated movement of aquarium fish to the real deal

In nature, certain animals have the tendency to live and move in groups. This is called flocking behaviour and can be seen in herds of cattle, flocks of birds and shoals of fish. The animation industry has used *Craig W. Reynolds*' model of this phenomena to create group behaviour on a large scale (first in the 'The Lion King'), without having to steer (program) each 'actor' individually. The flocking algorithm that is the basis of these crowd simulations consists of only three simple rules: *separation* (preferred distance between individuals), *cohesion* (move to the center of the group) and *alignment* (try to keep aligned with neighbouring 'actors'). The combined forces that these rules exert on every individual give rise to the collective behaviour of a flock, that seems to act more ore less as one entity, depending on the weight assigned to each of the rules.

In the installation '**Phishies**' an effort was made to see if this simulation of crowd behaviour would be distinguishable from the real behaviour. To achieve this, an aquarium filled with real zebra fish is tracked by means of a web cam. After digital image processing each frame is represented on a computer screen, where each detected fish is drawn as a pulsating orange/black oval. At each new time step the previous frame is still visible, but slightly faded, so the fish leave a trace.



For the simulation the existing processing version of the *boids* model by *Daniel Shiffman* was adapted to behave more like aquarium fish, since the level of flocking is less in a confined space than in a large living area. To get more individual movement some random elements of movement were added, for instance the chance to suddenly change direction. Also the graphical interface was adapted to match the frame rate of the tracked representation.

The end result is this installation, consisting of three small pillars, containing two monitors and a fish tank. The installion is placed in a triangle, with such a distance that it is not possible to look into two or all of the pillars at the same time.

Can *you* see which movement is real and which is simulated?