Flocking: Algorithmic Simulation of Shoaling Fish

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MSc Computing with Digital Media
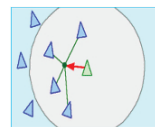
Flocking

- Behaviour of living organisms which move as a pack
- Can be noticed in many things from humans to birds
- First implemented into a computer algorithm by Craig Reynolds in 1986 called boids
- Algorithm will be demonstrated using fish and their shoaling habits

Algorithm

- Consists of 3 separate behaviours which combine to form 1 complex behaviour
- Behaviours are separation, cohesion and alignment
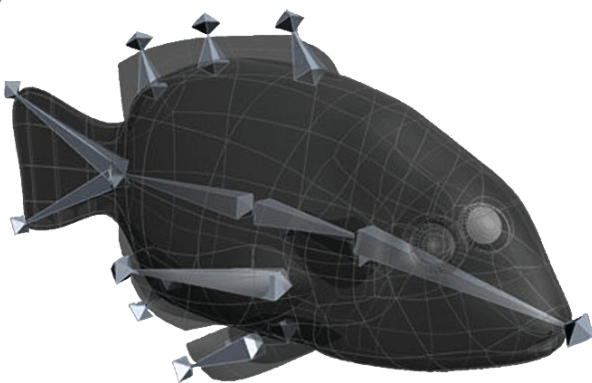- Algorithm can be expanded to include predators, obstacles and different types of fish
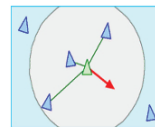
Object steers to avoid hitting flockmates

Object steers to average position of flockmates

Object steers to average heading of flockmates

Graphics

- Help to further demonstrate how flocking works by making the simulation realistic
- Boids will be made into species of fish, obstacles into rock formations etc.
- Fish will be animated in order to show behaviours better

Conclusion

- Can the algorithm be successfully replicated using fish?
- Will the algorithm display a realistic result?
- Can the algorithm be successfully implemented in 3D?
- Will differing algorithms for types of fish change their behaviour in a realistic way?

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