

Composable Group Behaviors

Perpetual Amoah - DMP undergraduate researcher

Abstract

The aggregate motion of a flock of birds, a school of fish, or a herd of land animals like sheep, cows and others is a beautiful and familiar part of the natural world. But this type of complex motion is hard to duplicate in computer animation. For many years, researchers have been focused on creating complex behaviors. Generating these complex and realistic group behaviors has been a challenging and time-consuming endeavor. This paper focuses more about how to accomplish this task. Our goal is to investigate methods to facilitate the generation of complex group behaviors for application such as games, virtual reality, robotics and biological or ecological simulation. Our general approach is to provide a framework that automatically combines simple composable behaviors into more complex behaviors. Our strategy is to compose a set of simple and basic user defined behaviors into unlimited sets of complicated and more interesting behaviors. In addition we demonstrate the concept of composable group behaviors using simulation of predators and prey behaviors. We developed several simple ways for predators to hunt for prey such as attack in groups and for prey to run away from the predators using run away random walk behavior. The result of this research is an easy to use, adaptive and flexible framework for simulating group behaviors.

Key Words: prey, predator, agent, flock, herd, school, composable behaviors, group behaviors