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## **Boids Algorithm**

### **I. Description of the problem**

#### **A. Name of the problem**

1. Boids Algorithm Implementation

#### **B. Problem Statement**

1. Simulate flocking behavior using Artificial Intelligence utilizing the functionality of the Boids Algorithm.

#### **C. Problem Specification**

1. The user can adjust the value of each modifier value of each rule that is used to achieve the flocking behavior that is being displayed on the screen. The values are adjusted by sliding the sliders on the lower right hand corner of the screen.

### **II. Input Information**

#### **A. Modifier Sliders**

1. The three sliders that are at the bottom right hand side of the screen is what the user can use to adjust how strong each of the rules impact the boids and their behavior.

### **III. Output Information**

- A. Boids are displayed on the screen simulating a flocking behavior

### **IV. User Interface**

- A. Sliders that adjust the modifier values for each of the rules uses to achieve the goal of a flocking AI.

### **V. System Architecture**

- A. The boid will begin to flock with the default values of the program.
- B. The user can then to adjust the modifiers of each of the forces by adjusting the values of the sliders by sliding them from left to right. Right will increase the values. Left will decrease the values. Decreasing the values or increasing will adjust how the boids flock around the screen.
- C. The Cohesion modifier will adjust how close the boids pull to the center. The higher the value the more clustered they are. The lower the value the more spread out from the center they are.

- D. The Separation modifier will determine how close each of the boids can be to one another. Sliding the modifier slider to the left will make it so they will be further to each other and sliding to the right will make it so they will be closer to each other.
- E. The Alignment modifier will determine how fast the boids are moving. The higher the value to faster they move the the lower the slower they will move through out the screen.