

## **Geometry Melee**

This software project will run a simulation of autonomous cellular agents, represented with simple geometric shapes. The simulation will be a melee, with a crowded field of combatants acting independently. In its full implementation, this project will feature a large number of interacting agents, with detailed collision detection and real-time intelligent behavior. The GUI displaying the simulation will have a separate state where the numerical details of the agents can be altered by the user, who can then observe the effects of these changes in the simulated melee. A use case where a user can take direct control of an agent, making the simulation function as a video game, may be implemented as well. The function of this program to the end user will primarily be entertainment.

Use cases:

1. An autonomous real-time simulation of interacting agents, presented to the user through graphics drawn to a GUI window. This will have multiple states controlled by the user allowing the simulation to be paused, reset, and restarted.
2. A state in the GUI that presents numerical abstractions of agent behavior to the user and allows them to change numbers through menus and text entry boxes in the Java GUI.
3. (Potential) An extension of the simulation use case where the GUI monitors user input in real-time and controls an agent in the melee directly through that input.