Project Progress Report

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Accomplished so far:

- I created the 2 types of morphologically different bees (a bigger queen and smaller workers) to represent the 2 agent types in my agent-based model. Using the bee objects from the previous homeworks, I improved their appearance with textures (though I need to explore more textures because the current is not super great to show the fuzzy bee bodies) and corrected the stripe patterns.

- I implemented the animation for the bee wing flapping. With this, I have one of the core bee behaviors for the visualization. The other core behavior is movement around the world, either by random walk or by following the pheromone gradient, and will be relatively easy.

- I also have a simple platform made of a cuboid that will tentatively exist as the world for the bees in this model. The top surface of this platform is where the bees will walk, emit pheromones, and form a swarm based on the communication network using pheromones. I'm thinking that lighting won't be applied to this top surface, because it might change the coloring of the animated pheromone diffusion.

Goals until the project review:

- I will next read in data from agent-based model experiments. The data will contain positions of each worker bee over time, and their state (random walk, emitting pheromones, or following the pheromone gradient). The data will also contain the pheromone concentration maps in forms of 2D arrays over time. For each time step, this map will be visualized on the surface of the platform. The main goal is to map the values in the array to colors. The pheromones diffusing from one bee should have gradient colors and then decay or disappear over time. I think I will attempt to use shaders for this, and would really appreciate any other suggestions. I could also pre-generate the concentration maps as images and map them to the platform surface as textures, but that might not look very good.

- Work on the stretch goal of adding other objects, like flowers and trees, to the visualization, if time allows.