To run a simulation, launch SimulationGUI with `java edu.stanford.bio.simfish.gui.SimulationGUI` or by running the included .jar file, which has SimulationGUI as the main method. Click the Open button to open a simulation file. Finally, run the simulation using the Run button. The text box next to the button allows for an optional argument allowing users to set the number of replicate runs to be completed during each simulation run. A progress bar tracks the advance of the simulation.

Buttons are also provided to save the current output and clear the output box. The simulation was designed to be run with multiple different fish types, but for the purposes of this paper it was populated with sharks only.

When writing the simulation format, any blank line is ignored, as is any text that comes after # in a line. The file is otherwise in a text format with four sections. The first (non-blank, non-comment) line is a path to a file describing the types of fish available in the simulation (see the description below). The second line is a number indicating the radius of the simulation observation area; all fish will have a home location in that radius, uniformly distributed across the area.

The next section is a list of the fish schools in the simulation. Each school is on a separate line and is in the format `x fish Y`, where `x` is the number of times to create this school, `fish` is the name of the fish, and `Y` is the number of fish in the school. If `x` is omitted, exactly one school of this description is created. `fish` must be a fish type listed in the fish stats file. If `Y` is omitted, the number of fish is drawn uniformly from the minimum to the maximum number of fish according to the fish stats file.

The final section is a list of observers. Each observer is on a separate line. The three types of observers are point, belt, and video. Notes on the specific operation of each observer are in Appendix D.

Observers are specified as the name of the observer, followed by a whitespace separated list of parameters. Each parameter is of the form `x=Y`, here `x` is the parameter name and `Y` is the value. A list of parameters is as follows:

Name	Affects	Notes
observationradius	Point, Video	The limit at which the observer can detect subjects
observationangle	Video	Measured in radians. This angle is observed to both the left and right, e.g. PI is a full circle.
forgetradius	Point, Belt	A fish outside this radius will be forgotten and will be counted again as a unique individual if it re-enters the observation area.
beltwidth	Belt	Subjects will be observed along the whole width of the belt
observationlength	Belt	The distance the belt observer can see subjects in front of itself
beltlength	Belt	Total length of the belt transect
livetime	Point, Video, Belt	Duration of observer activity. The simulation runs for the maximum active time of any observer.
cycletime	Video	Duration of each video cycle. The video observer is active for part of the cycle and inactive for the rest of the cycle.
activetime	Video	Duration of the time during the video cycle for which subjects are recorded.

The fish stats file is formatted in a similar fashion. Comments start with # and are ignored after the start of the comment. Each fish type in this file is defined by a block of text with each parameter on its own line. If multiple species are included in the simulation, they are to be separated by multiple blank lines or lines of comments. Parameters are specified as x:y where x is the parameter name and y is the value.

Parameter	Notes
type	Fish type ID
min_school_size	The size of unspecified schools will be drawn uniformly from between min and max school size
max_school_size	
tortuosity	Ratio between the total distance traveled by subject during set time period and the distance between the start and end points for the same period
max_speed	Upper limit of speed
homerange	The fish will head towards a target location within this radius of its homerange 95% of the time