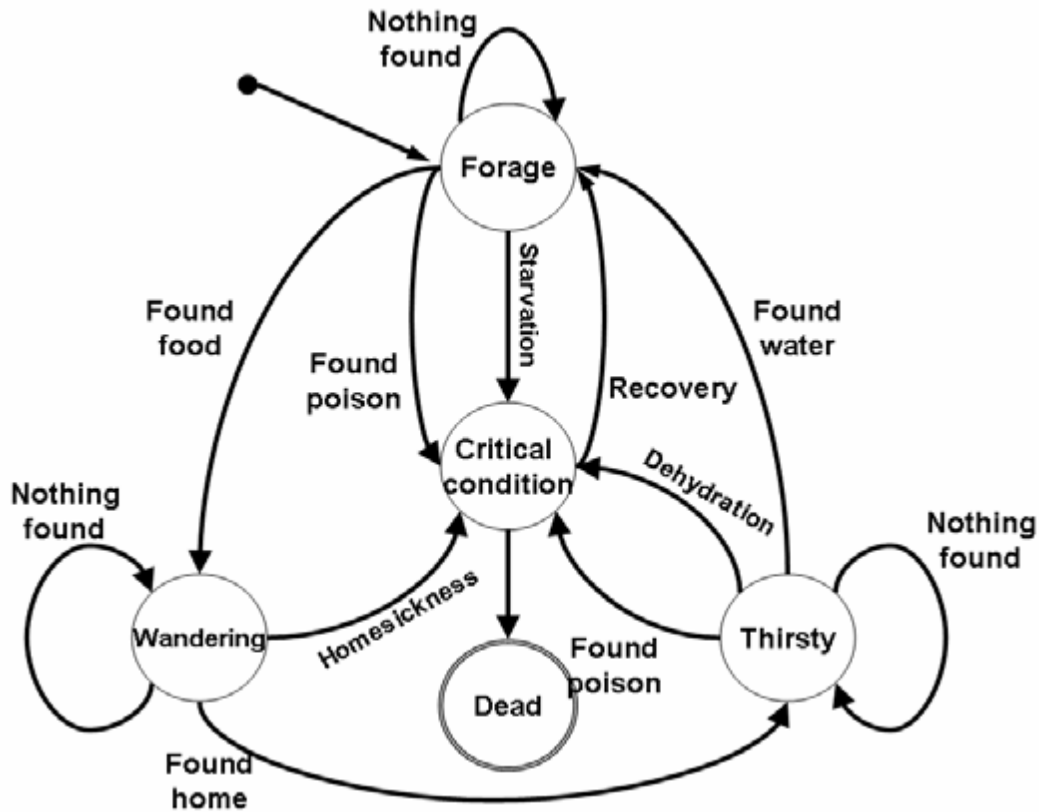


Finite State Machine Project: Save the Ant

A PvE “strategy” game has the goal of keeping an ant alive. This game does not rely on skill, but strictly on chance.



The finite state machine (FSM) for the game is shown below.

The game has the following design specifications:

1. The ant begins with 10 health points (HPs).
2. The ant begins in the foraging state.
3. While foraging, the ant has a 60% chance of finding something.
 - a. If the ant finds something, there is a 10% chance that it is poison, and a 90% chance that it is food.
 - b. If it finds food, it gains a HP, for a maximum of 10 HPs.
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- c. If it does not find food, it loses a HP. If it loses its entire budget of HPs while searching for food, it begins to starve, and goes into critical condition.
4. While wandering, the ant has a 45% chance of finding its home.
 - a. If it does not find its home, it loses a HP.
 - b. If it finds its home, it does not gain back any HPs.

- c. If it loses all its health points while wandering, it goes into critical condition due to homesickness.
5. When the ant arrives home, it becomes thirsty. It has a 40% chance of finding something.
- a. If the ant finds something in this state, there is a 10% chance that it is poison, and a 90% chance that it is water.
 - b. If it finds water, it gains two HPs (for a maximum of 10 HPs).
 - c. If it does not find water, it loses one HP.
 - d. If it loses all of its HPs while searching for water, it goes into critical condition due to dehydration.
6. If at any point the ant finds poison, it loses all its HPs, and goes into critical condition.
7. If the ant is in critical condition, it has a 30% chance of recovery. If it recovers, it gains back all of its health points, and returns to its foraging activity.
8. The number of steps from the ant's initial foraging to eventual death will be recorded.

The game can either perform a transition triggered by some "player" action, such as pressing the "Enter" key, or it can run without user intervention (but this would be obviously less fun).

At each stage, your game will display the ant's current activity, and its health points. The player must be provided with adequate feedback.

This project is due in four weeks (Dec 8, 2017)