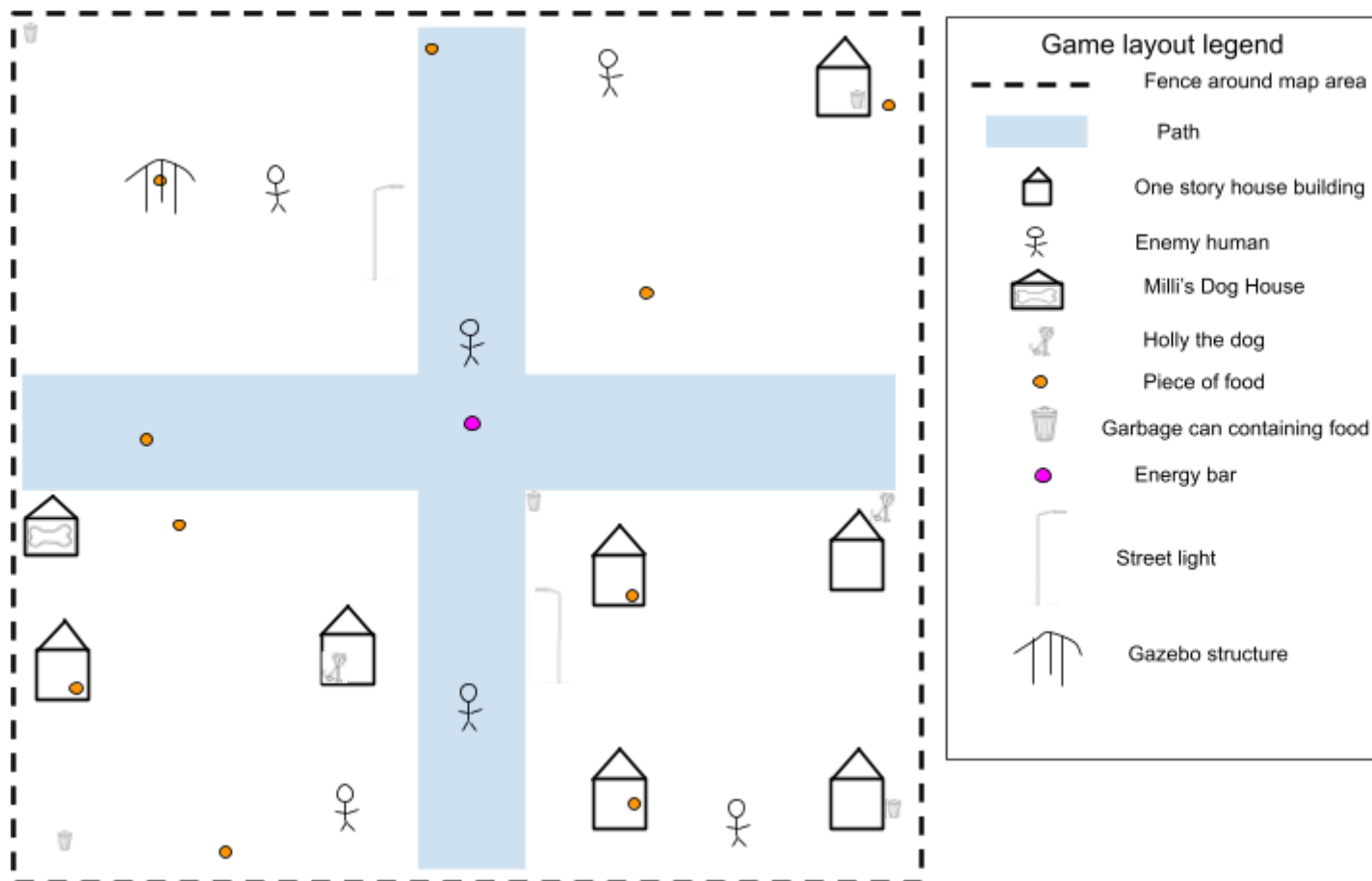


## Overall game idea: Milli the hungry dog

The player controls Milli, a perpetually hungry dog on a mission to find and eat as much food as possible. Food is scattered around the map or hidden inside garbage cans. To eat, Milli must either interact directly with food or knock over garbage cans to reveal the hidden food before eating it. Milli loses energy over time, which can only be replenished by consuming food. As Milli eats more food, the behavior of humans in the game changes. Initially, they are idle, but as Milli eats, they start patrolling the area and eventually increase their speed. They have a field of view and will only react to Milli if she is within it. If caught, they will attempt to "attack" by petting Milli. If Milli is pet too many times, she falls asleep. Milli can defend herself from enemies by wiggling, which stuns the humans for five seconds, allowing her to escape. If Milli's energy drops below 20, her movement speed decreases. The player has three chances before the humans catch on and hide all the food, resulting in a game over. The player's life count is displayed on the screen, and Milli respawns in her doghouse after seven seconds. A counter tracks the number of food items eaten, and upon collecting all the food, the player wins the game.

## Game level layout:



- The level consists of an open map with small buildings, objects, and paths.
- There are two crossing main paths, however none of the characters are restricted to walking on these.
- The map also has two street lights which will act as light sources
- Food items are scattered across the map, some placed openly while others are hidden inside garbage cans.
- Special items, holly the dog and energy bar, are placed in different spots on the map.
- Humans patrol key areas and react based on the player's food consumption.
- Milli has a dog house that she can go hide in at any point in the game.
- The game layout is also fenced in, keeping the player in the correct area of the game.

### **Player (Milli):**

#### **Controls:**

- Arrow keys/WASD for standard movement
- Q key used for Ability: wiggle
- 'E' key used to interact with food and garbage cans
- Shift key to activate ability: zoom
- 'L' key key to activate Ability: Lose Hair (one-time use)
- Spacebar for jump

#### **Abilities:**

Milli has three possible actions:

Wiggle: when spacebar is used milli 'wiggles' which distracts and stuns humans within a 5.0f radius for 5 seconds.

Zoom: when shift key is used milli 'zooms', doubling her speed for 6 seconds. It costs 5 energy to use this ability.

Eat: When 'E' is used, Milli can knock down garbage cans, or consume food. Eating food results in energy increasing by 5 points.

Lose Hair : When 'L' is used, Milli sheds a large amount of hair, causing the closest enemy to give up, lay down and be permanently out of the game. This ability can only be used once per playthrough.

#### **Animations:**

- Idle – Default state when the player is not moving.
- Walking – Activated when the player starts moving.
- Running – Triggered by a speed boost ability.
- Eating – Activated when the character interacts with food or garbage can.
- Wagging tail – Happens when wiggle ability is used
- Barking like - using the "lose hair" special move.

## **Enemies (Humans):**

### **Abilities and behaviour:**

- Initially idle, humans start patrolling after Milli eats five pieces of food.
- Patrolling humans walk back and forth along a defined axis and rotate in a circle every 0.2f.
- If Milli enters their field of view, they chase and attempt to pet her.
- Being pet causes Milli to fall asleep, and humans perform a celebratory dance for seven seconds.
- As more food is eaten in increments of five, human speed and sight range increase.

### **State machine representing the behaviour:**

#### Idle (Start State)

- Does idle animation
- Default state before Milli eats five pieces of food.
- The human stands still, but can still see milli if she is in the limited line of sight.
- Transitions to Patrol after Milli eats five pieces of food.

#### Patrolling

- Does walk animation
- The human begins walking along a predefined route.
- Every 0.2f, the human rotates in a circle to scan for Milli.
- If Milli enters their field of view, transition to Chasing.
- If Milli has not been seen, remains in Patrolling.

#### Chasing

- Does run animation
- The human detects Milli and moves toward her at an increased speed.
- If Milli leaves their field of view, switch to Patrolling.
- If the human is within range of Milli, transition to Petting.

#### Petting

- The human "pets" Milli, causing her to fall asleep.
- The human transitions to Celebratory Dance.
- If Milli becomes out of range, switch to chasing.

#### Dancing

- Human does dance animation
- When milli is awake, and Milli has eaten 5 or more pieces of food switch to patrolling
- When milli is awake, and Milli has eaten less than 5 pieces of food, switch to idle.

#### Stunned

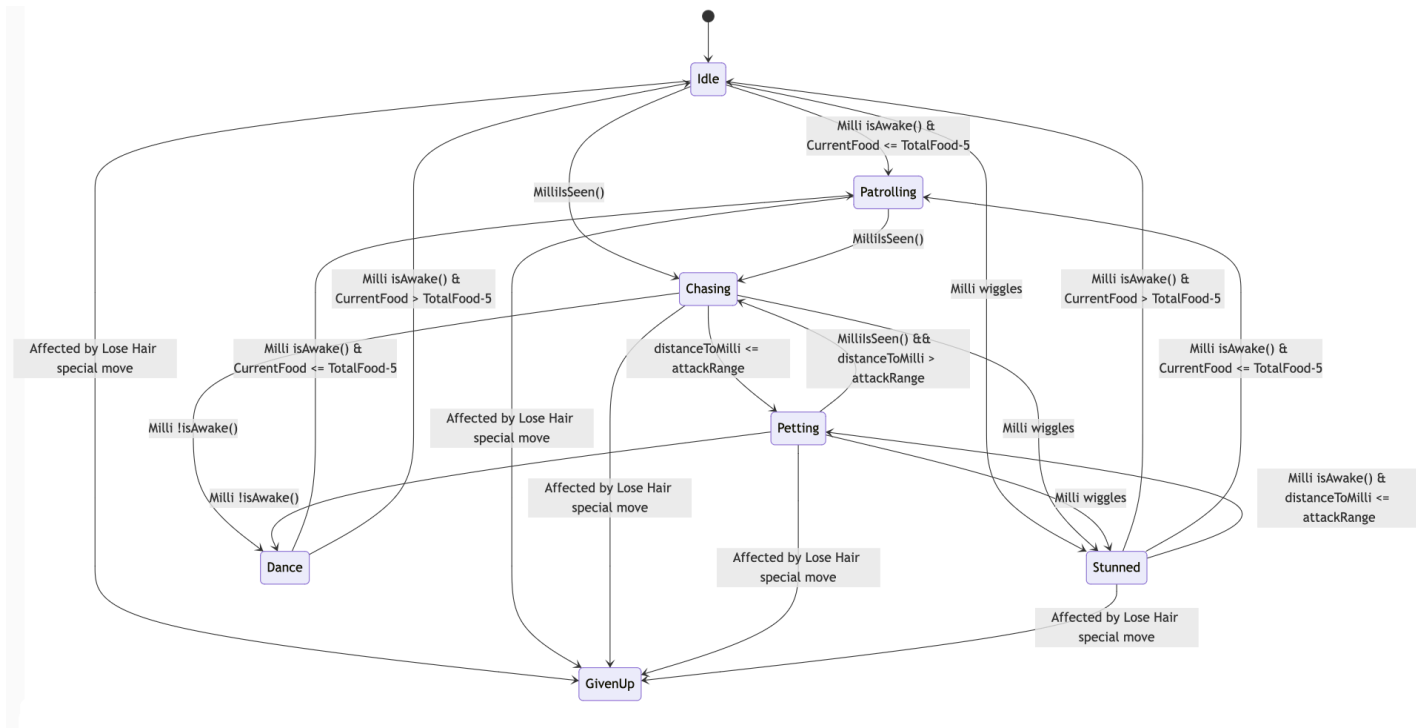
- Does idle animation
- After five seconds, if Milli has eaten 5 or more pieces of food switch to patrolling
- After five seconds, if Milli has eaten less than 5 pieces of food, switch to idle.
- After five seconds, if milli is within range, switch to petting

#### GivenUp

- Occurs when affected by Milli's special move "lose hair"

- Closest human lays down forever
- Will never leave this state

State machine diagram:



Animations used to visually represent the behaviour:

- Idle
- Walking
- Running
- Petting
- Dance
- LayingDown

Other game entities:

Triggers:

- Next level trigger: player moves to next level once Milli has eaten five pieces of food. Each time this threshold is met, the enemies become faster and gain an increased field of view.
- Milli Caught Trigger: Milli has been caught, reduces one life, respawns Milli in the doghouse.
- All Food Collected Trigger: All food has been collected, triggers the victory screen.
- No Lives Left Trigger: Milli has been caught three times, triggers the game over screen.

### **Power-ups:**

- Magic Dog Treat: Grants an extra life but does not count toward the food goal. Only one exists in the game. This treat can be identified easily as it will be slightly bigger and have a different colour than the standard food items.
- Find Holly (Milli's Best Friend): Fully restores Milli's energy. Can be found twice in the game.

### **Anything else relevant:**

- Dog House: A safe zone where humans cannot detect Milli.
- Food Counter: Displays the number of food left to be found.
- Energy Bar: Indicates Milli's remaining energy.
- Difficulty Scaling: Humans become faster and have an increased field of view for every five pieces of food that is eaten by milli.

### **Features:**

- Open Map Layout: Includes pathways, buildings, streetlights, and is a fenced-in area.
- Food Collection: Food is placed openly or inside garbage cans that can be knocked over.
- Energy Count: Player's energy depletes over time and replenishes when eating food.
- Life count: player's lives are lost each time they are caught
- Player respawns in the doghouse after being caught.
- Human/enemy ai system: Enemies are affected by milli's stun or lose hair abilities.  
Enemy State Machine: Idle, Patrolling, Chasing, Petting, Dancing, Stunned, Given Up.
- Milli's Abilities/ activities:
  - Wiggle (Stun Ability): Stuns humans for five seconds.
  - Zoom (Speed Boost): Doubles speed at the cost of 5 energy.
  - Eat: Collects food to regain energy, adjusts food counter.
  - Lose Hair (Special Ability): Permanently removes an enemy. Can only be used once
- Enemy State Machine:
  - Idle, Patrolling, Chasing, Petting, Dancing, Stunned, Given Up.
- Power-Ups:

- Magic Dog Treat: Grants an extra life. Only one in the game, vanishes after interacting with
  - Find Holly: Fully restores energy. Two in the game, vanishes after interacting with
- Game Triggers:
  - Next Level Trigger (All food eaten)
  - Milli Caught Trigger (-1 life and respawn in dog house)
  - All Food Collected Trigger (Game Won! All food eaten)
  - No Lives Left Trigger (Game Over, all lives lost)
- On screen display:
  - Food Counter
  - Energy Bar
  - Life Counter
  - Current level
- Animations for player actions (movement, eating, special move). Animations for ai enemies (idle, laying down for given up, walking for patrolling, running for chasing, petting, dance)
- Levels: Humans gain speed and sight range with each level. A new level is reached after each food is eaten in increments of five.