# Festival Simulation Assignment

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## 1. Introduction

Photos of the simulation project is to model festival environment where guests experience basic needs, specifically hunger and thirst and interact with their surroundings to fulfil these needs. Inflation Guests wonder around a festival area and periodically become hungry. Authority When either of these needs arises, the guest seek guidance from an Information Centre to locate the nearest store that can provide food or water. The guest then proceed to these stores to replenish their needs before returning to their ideal, exploratory behaviour.

This simulation Utilises agent based modelling to create dynamic interactive behaviours among different types of agents, specifically festival gas stores and an Information Centre. Each guest is driven by attributes that. Increase overtime and trigger specific behaviours such as seeking directions from the Information Centre or visiting stores to satisfy their needs. By simulating these behaviours, the project Explores how agents interact in a system with basic needs and location Based guidance demonstrating the flow of actions in a festival setting.

The objectives of this project are to:

- England, basic human needs ( thirst and hunger) And the behaviours they drive.

- Implement interactive agents that respond to environmental cues and

- Provide a continuous self-sustaining model. Where guests alternate between wandering, seeking assistance and fulfilling needs.


2. Agent Design and Roles:

Simulation 3 Primary agents, festival guests, stores and the Information Centre interact with one another to create a dynamic festival environment where guests navigate to satisfy basic needs. Each agent has specific character routes, roles and behaviours contributing to the overall flow of the simulation.

- ✓ **Festival Guest:** Festival Gas are the main actors in the simulation. They represent people at the festival who become hungry or thirsty overtime and seek out resources to satisfy their needs.

    - ➢ **THIRST and HUNGER:** Integer values that increase over time, representing the guest's needs for food and water. These attributes drive the guest's behaviour by promoting actions when they exceed a certain threshold.

    - ➢ **guestColor:** A colour attribute used to visually represent the guess current state. Guess turn blue when they seek water, red when they seek food and green when they are idle.

    - ➢ **destinationStore:** This attribute temporarily holds the store location that the guest will visit to satisfy their needs.

    Guess room the festival, their thirst and hunger values increase gradually overtime, simulating a natural rise in hunger and thirst. When guests are neither hungry nor thirsty, they wonder randomly within the festival grounds, exploring the area until a need arises. When a guest, the star hunger reaches a certain threshold (500 in this case), they had to the Information Centre to ask for directions to the

nearest store that can fulfil their needs. Directed by the Information Centre guest travel to the specified store. When they arrived, they reset the appropriate attribute, thirst or hunger, to zero, indicating that their need has been satisfied. They then return to idling and resume wandering.

- ✓ **Information Centre:**

  Information Centre acts as a central resource within the festival where guests can ask for directions. It helps gas find the nearest store that meets their needs, either for food or water. The Information Centre maintains a list of stores classified by type, either water or food, making it easy to provide directions to guess based on their current needs. When guests arrive at the Information Center, it directs them to the nearest store of the appropriate type. For example, if a guest is thirsty, the Information Centre directs them to the closest water store.

- ✓ **Stores**:

  Stores are fixed locations within the festival grounds that provide either food or water. These locations serve as destinations where guests go to replenish their needs. Which story is designated as either a food store or water store. These two types are distinguished by colour, with food stores coloured red and water source coloured blue. When a guest arrives at a store, the store enables the guest to reset the appropriate need attribute to zero. Store is a water store; the guest trust is reset. If it is a food store, the guest hunger is reset.

## 3. Simulation Flow and Key Behaviours:

Simulation begins with festival gas randomly placed across the festival grounds and stores designated as either food or water scattered throughout. Overtime, guests' thirst and hunger attributes increase, eventually promoting them to seek assistance from the Information Centre.

- ✓ Increasing Needs: Guess, test and hunger values grow steadily, triggering a visit to the Information Centre once either need exceeds a threshold of 500.

- ✓ Seeking Information and Directions: Gas head to the Information Centre where they receive directions to the nearest appropriate store based on their needs.

- ✓ Visiting Stores and Replenishing: Guess travel to the designated store and reset their thirst or hunger upon arrival depending on the stores type.

- ✓ Continuous Cycle: Guess, then return to wondering idly until their needs rise again, creating a repeating cycle of wandering, seeking and replenishing.

This process continues indefinitely, simulating a realistic responsible festival environment where agents dynamically interact based on their needs.

Festival Simulation successfully demonstrates how agent-based modelling can represent dynamic interactions in a complex environment. By simulating festival guests with rising needs for food and water, guiding by an Information Centre to nearby stores, the project achieves realistic portrayal of guest behaviour within a festival setting. Each agents' actions are driven by simple internal attributes, thirst and hunger, which create a continuous cycle of wandering, seeking assistance and replenishing needs. The simulation effectively meets the projects objectives by showcasing how guests' response to environmental cues and interact with resources. This project highlights the flexibility of agent-based modelling to simulate real world scenarios and provide, say, foundation for exploring even more complex behaviours and interactions in future studies.