

# Simulating Animal Crossing New Horizons

MSDS460 Decision Analytics - Term Project

Sally Lee



# Problem Definition

- **Objective:** Simulate the dynamic behaviors of autonomous entities in a virtual environment
- **Goal:** Understand emergent behaviors and social interactions in life-simulation games
- **Methodology:** Python's mesa module to create an agent-based simulation





# Applications and Literature

- Agent-based modeling (ABM) has been widely used in pandemic modeling like the recent COVID-19 spread
- ABM helps urban planners study traffic congestion and autonomous vehicle
- Foundational work by Thomas Schelling Dynamic Models of Segregation 1971





# Design

- Each villager is an autonomous agent with a randomly selected predefined personality influencing activities and sleep cycles
- Simulation iterates through daily cycles, tracking movement, interactions, and tasks
- Used publicly available game data for parameters and states





# Future Improvements

- **Path-finding:** Navigation using algorithms e.g. Dijkstra's
- **Advanced decision-making:** Reacting to environment and events
- **Weather system:** Influences behavior
- **Emotions/Mood:** Agent interactions can affect mood and influence behavior

