

Restaurant Simulation through Multi-Agent Systems

Group 35

2nd Project Definition

In the first part of this project, we simulated a restaurant, populated by a number of agents of three kinds: customers, waiters and kitchen.

The customers placed individual orders and their goal was to have a satisfying meal. This depended on several factors such as the availability of the meal they wished to consume, its overall quality and respective waiting time. As for the waiters, their job was to take the client's orders, having as their personal goal to maximize the amount of cash received as tips.

In order to achieve their goals, the agents, more specifically the waiters, needed to learn about certain properties of their environment like meal cooking times, the probability of these being well prepared and their availability. They could do this in two different ways: by asking the kitchen agent, which is always reliable but at the same time it takes a while to do so, or by asking other waiters, which is much quicker but the information received might not be 100% accurate. The reason for this is that waiters had different strategies to achieve their goal, which might include lying to each other (so as to guarantee that their own customers get a limited meal of their choice, for example). They could also fully cooperate between themselves so as to guarantee access to fast and reliable information.

In this second project, we plan to approach two linear regression type problems, more specifically how certain factors influence the main **dependent variables**, a customer's mood at the end of its meal and the total amount of money accumulated by a waiter in tips.

Both of these are affected by other **(independent) variables**, such as the customer's initial mood, the characteristics of the meal ordered (preparation time, quality and availability) and the waiter's strategy regarding information sharing. In addition to these, the second dependent variable is also influenced by the first one so it will be interesting to study their relation with each other.

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