Restaurant Simulation through Multi-Agent Systems

Group 35

The system is intended to represent a restaurant, populated by a number of agents of two kinds: customers and waiters.
The customers place individual orders and have as their goal to have a satisfying meal. This depends on several factors such as the availability of the meal they wish to consume, its overall quality and respective waiting time. As for the waiters, their job is 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, need to learn about certain properties of their environment like meal cooking times, the probability of these being well prepared and their availability. They can do this in two different ways: by asking the kitchen staff, which are 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 can have 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 can also cooperate between themselves so as to guarantee access to fast and reliable information.

Regarding the environment, we can then classify it as partially observable (the agents don't have full, accurate information regarding it at all times), multi-agent, stochastic (some actions don't have predetermined effects, such as lying to another waiter), sequential (past actions interfere with future ones), dynamic and discrete.

With respect to protocols, we intend to use FIPA-Request between waiters and customers and among waiters as well.

Dependent variables	**Independent variables**
Meal cooking times	Waiter types
Customers' favorite meals	Probability of each meal being well prepared
Available dishes	

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