**C458 Group Project Proposal**

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**BarBot17**

Bar bot will be a food delivery robot for a serving counter which can deliver orders of small items such as mints, chocolates, etc. to customers who are sitting at the bar. It will load itself via an arm attached to the top of the bot. Customers will each have a double-sided card with a certain color (e.g. red) on one side and a different color (e.g. green) on the other side. One color will indicate the customer wants an order. The other color will indicate the customer is content and does not desire an order. The robot will make cycles through the counter, ignoring unoccupied spaces and customers who use the color-coded card to indicate they don’t desire an order. The barbot’s goal will be to deliver items only to customers who desire an order as quickly as possible via the attached arm. We will simulate the environment of a bar with a narrow platform on which we will place the delivery area.

Further options exist for extending the scale of the Bar Bot system once the initial objectives are accomplished. For instance, the system could be further broadened to include multiple bots. In such a case, one bot might traverse a room, gathering orders from customers, and another bot would actually fulfill the orders.

**Environment**

There are 3 main parts of the environment: the storage/loading area, the bot traversal area, and the customer area.

The storage/loading area is to be at the end of the counter. There, a hopper or some similar storage container will contain the consumables (e.g. mints). The bot will approach the hopper at the end of a bar run and the hopper will be opened, allowing the consumables to empty into the storage basket on the bot.

The bot traversal area is the space on the counter where the bot moves. The space stretches from one end of the counter to the other end. The bot will move forward from the hopper along this traversal space to attend each customer and, when the bot reaches the end of the counter, it moves backward to the hopper to start another run.

The customer area is the area closer to the edge of the counter where customers will display their color-coded card to the bot, and where the bot will also place the customer’s order. To start with, the number of customers allowed at the counter will be static. However, as the project progresses, delivery memory will be implemented so the bot knows who all its delivered orders to in a run.

**Sensors**

The sensors likely to be needed for the bot to perform the aforementioned tasks are: two line follower sensors, an ultrasonic sensor, a color sensor, and possibly some pressure sensors for the arm (if none come with it).

The line follower sensors would be needed for 1) notifying the bot when it is near the edge of the counter and 2) possibly for notifying the bot when it has reached the loading area (where a piece of tape would mark where it needs to stop).

The ultrasonic sensor might be used in place of the second line follower sensor to notify the bot when it has reached the hopper.

The color sensor would be used to notify the bot what color card the customer is displaying, thus notifying the bot if it needs to give the customer an order.

The pressure sensors would be needed to notify the bot how much pressure the arm is using in gripping a consumable.