

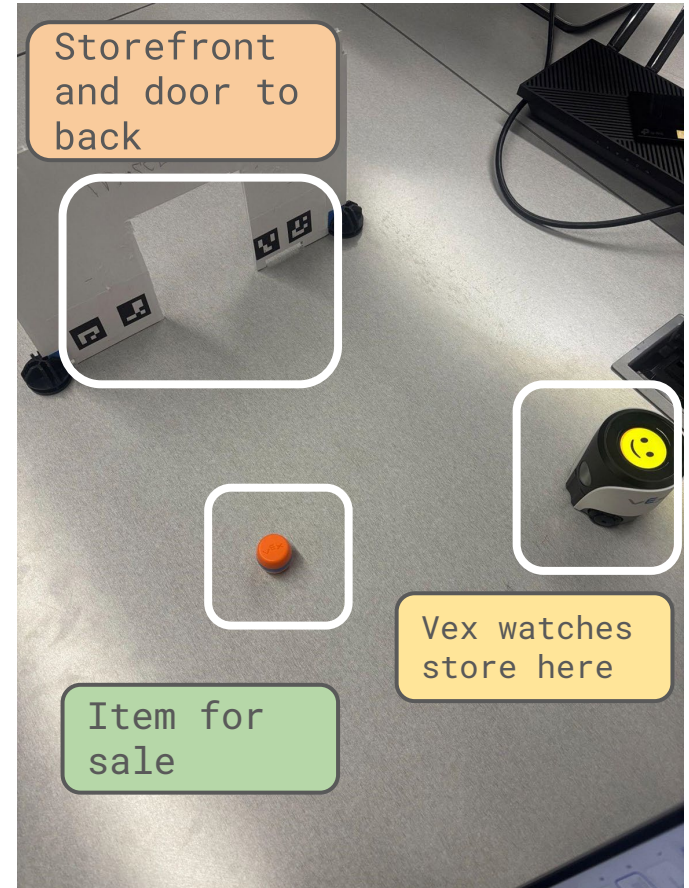
Vex Store

Pragya Devashish and Marcus Tita
15494 - Cognitive Robotics



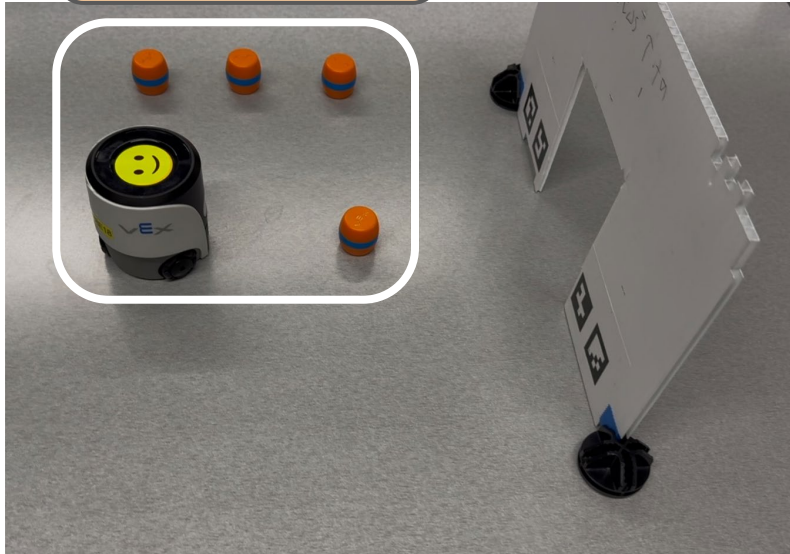
The Problem

- When store items are sold they disappear from the available inventory
- Someone needs to refresh the stock from the storeroom to the storefront
- The store shouldn't be overstocked



Our approach

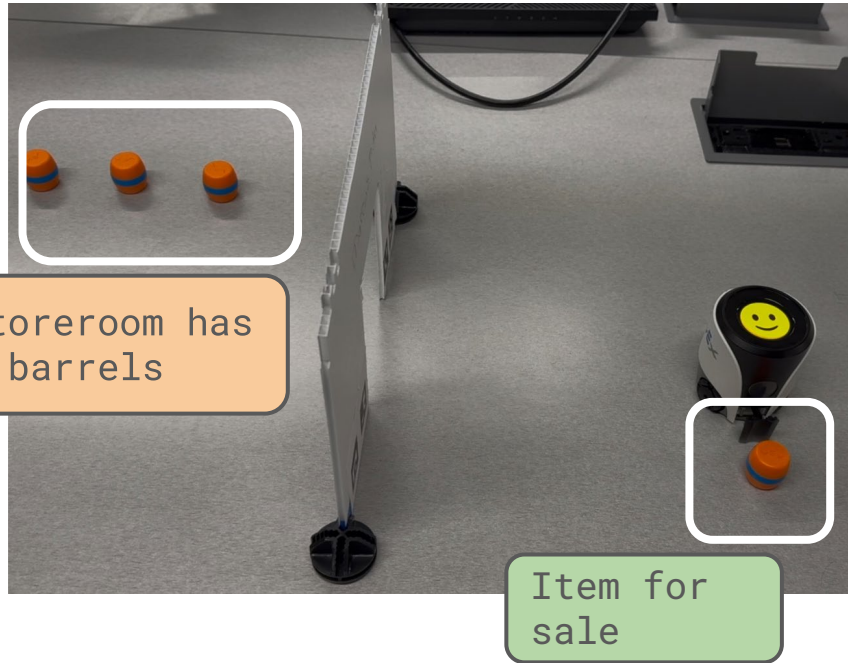
Vex starts
with 4 barrels
in stock



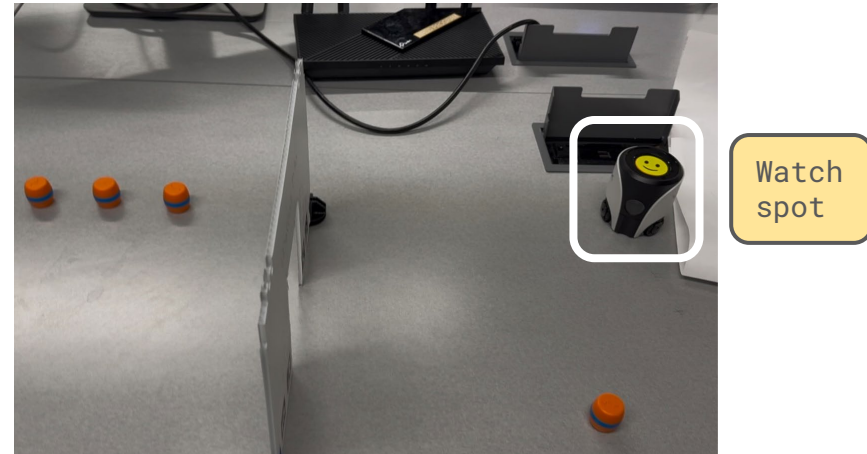
- Built a state machine with various nodes + transitions
- Key functionality: **wait** node allows Vex to stand sentry in the storefront
- Only when store is empty is it restocked
- Vex is cheerful and alerts the user to store updates

Our approach

Stocking and wait:

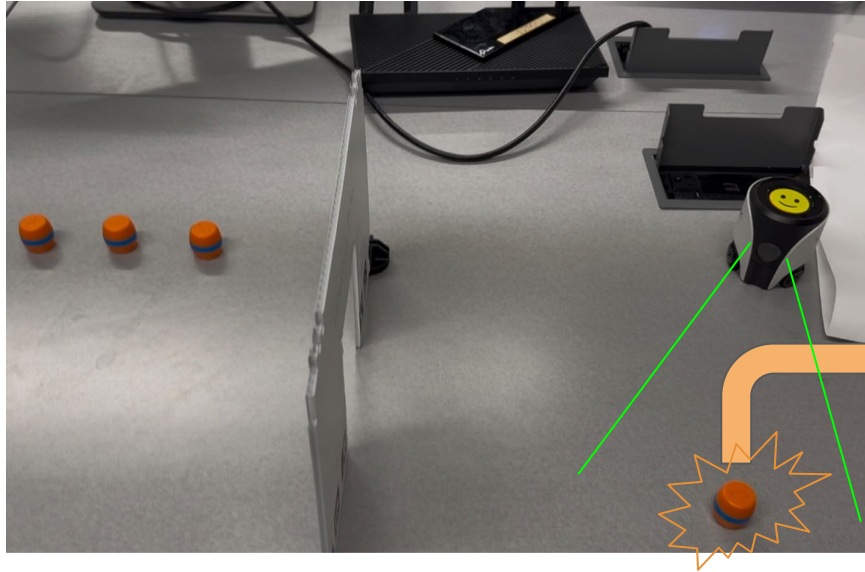


- “Barrels of beans” are stocked in a designated location
- Vex retreats to a location to wait for store to be emptied (below)



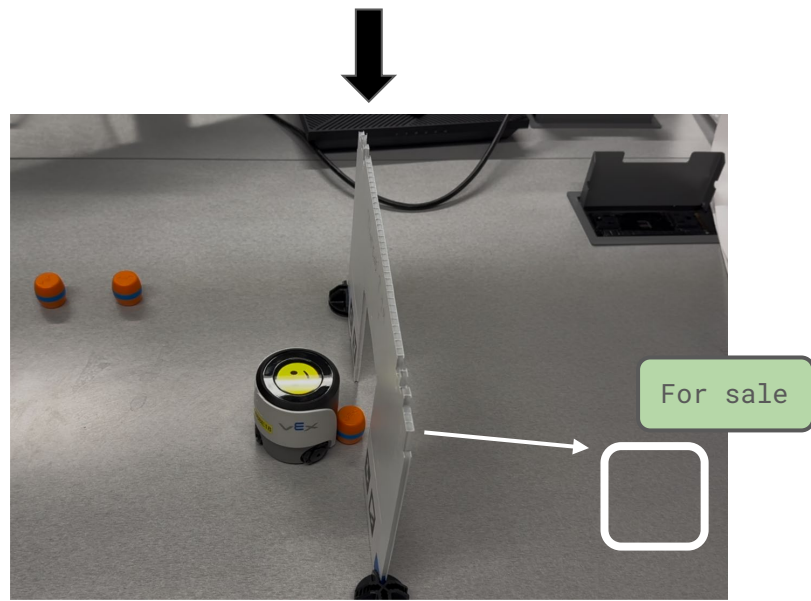
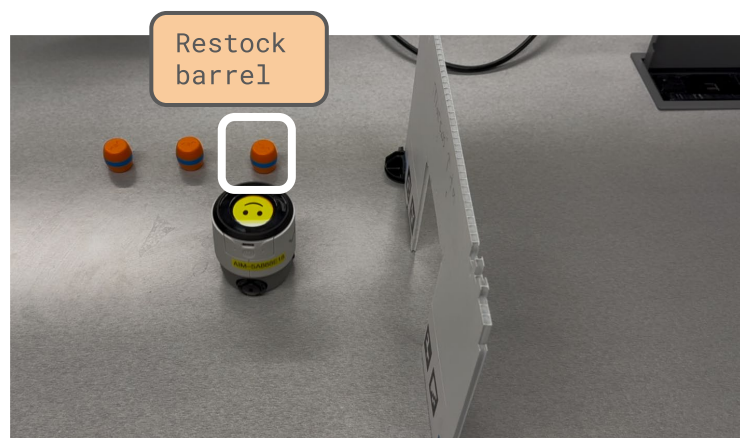
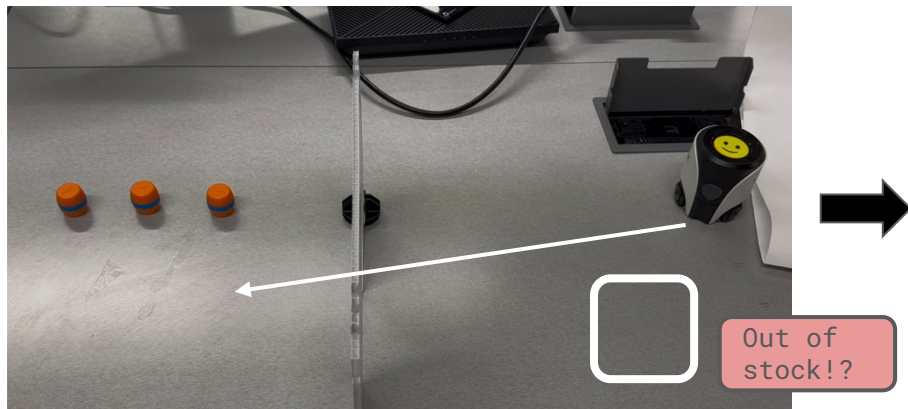
Buy an Item?

and wait:



- Vex is watching when the item gets bought
- Vex now goes to the back to restock the front with a barrel

Buy a barrel



Most Interesting Aspect of our Solution

Vex is able to wait an indefinite amount at the storefront for a shopper, and then if the shopper buys an item Vex restock it up three times.

Results + Future Work

Successes:

- Robot was able to successfully identify an empty storefront and stock it
- Was able to select the closest barrel in the warehouse for transfer

Failures:

- Barrels in warehouse were occasionally not picked up properly
- Cluster of barrels (how real-world warehouse would be) handled poorly

Future work:

- Multi-room store where each room sells different products
- Better utilization of GPT to create salesperson persona that can do a bulk order