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Bot code: d510_d438_StateMachineTest

Approved and Reviewed by: Tushar Garg

WTM Firmware versions:

1. Master: d491
2. Slave: d492
3. General: d493
4. Infeed(Z41): d494

Testing criteria:

1. Two bots, one primary, one auxiliary.
2. Auxiliary bot generates a tail, primary bot detects the tail and sweeps at a safe distance behind.
3. When the auxiliary bot moves forward, the primary bot should resume moving and stop and sweep again if it detects a tail.

Test procedure:

1. Flash the WTM and 2 bots ESPs with appropriate firmware.
2. Situate the bots at least 4 meters apart on track with the auxiliary bot placed in front of the primary.
3. Start the WTM, initialize the auxiliary bot with the emergency button pressed and move it through the track and stop at a random zone.
4. Initialize the primary bot and let it move through the track.
5. The primary should detect the tail left by auxiliary and stop at a safe distance and start sweeping (moving back and forth) at the stopped column.
6. Ensure the bot doesn't skip the column while sweeping.
7. Move the auxiliary bot through the track and validate the primary's sweeping behaviour.
8. Repeat the rest with various speeds adjusted in the same bot code.

Pass/Fail criteria:

PASS - Primary passes the test when it successfully sweeps behind the auxiliary's tail at a safe distance for a reasonable amount of time and without skipping ahead. This should be validated at the max intended bot speed.

FAIL - Primary doesn't stop at a safe distance behind the tail.
Primary skips the stop column and moves forward potentially
colliding with the auxiliary bot.

Test Results:

1. Bot B7 was selected as the primary. B9 as Auxiliary.
2. Bots B7 was tested at three speeds, 0.5 m/s, 1 m/s and 2 m/s.
3. B7 passed the test at all three speeds.