Requirements

Group I

March 13, 2019

Bots $\stackrel{\text{Def}}{=}$ the robots that are taking items from the conveyor belt
"take signal" $\stackrel{\text{Def}}{=}$ the signal that some bots receives when the belt expects it to take the disk, in front of the bot from the conveyor

1 Requirements

1.1 System Requirements

1. When a disk is put on the belt, the system assigns a bot to the corresponding disk
2. Assuming regular speed without stops: When a disk arrives after 2 seconds at the assigned bot, the system sents a `takeItem` to the corresponding bot
3. When the system receives an emergency command, all bots shall receive an emergency alert within 0,5 seconds.
4. When the belt receives an emergency alert, the belt will shut down within 0.2 seconds.
5. When the belt receives a `available` of a bot, it will change the status of the bot to "free" in the system
6. In the system each bot will have a status of "free", "waiting" or "busy"
7. In the system at every time, each disk is assigned to at most one bot.
8. When the system receives a "free signal" of a bot, the status of the bot will be changed to "free"
9. A disk can at every time be assigned to at most one bot.

1.2 Requirements bots

1. The bot has its grabbing mechanism on the moving belt within 3 seconds after `takeItem` signal
2. The grabbing mechanism can take items from a moving belt.

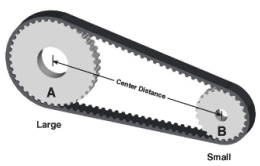
1.2.1 Messages

3. When the bot finishes its task, the bot will sent an `available` signal to the system within 0.5 seconds.
4. The bots are allowed to take precisely one item from the belt after receiving a `takeItem` until the bot sends an `available` signal
5. When a bot receives a `takeItem` it takes the item after 2 seconds from the belt.
6. When a bot detects a specified error the bot will sent `emergency` signal within 0.5 seconds
7. When a bot wishes to place an item on the belt the bot will sent a `placeItem` signal within 0.5 seconds
8. The bots are allowed to place precisely one item on the belt after sending a `placeItem` signal and receiving a follow up `placeItemGranted` signal.
9. When the bot receives a `placeItemGranted` signal the bot should place the item on the belt within 3 seconds
10. When the bot receives a `placeItemDenied` signal, the bot can send a new `placeItem` signal only after 10 seconds

1.2.2 Requirements Group II

11. The system can send at most one `startSequence` signal every 2 minute
12. Sequences consist out of 8 consecutive disks
13. Sequences have been discussed with group I beforehand
14. When the bot receives the eighth disk, it sends a `sequenceReceived` signal.
15. When the bot is done processing the sequence, a `sequenceProcessed` signal is sent by the bot

1.3 Requirements belt



1. The center-to-center distance is minimal 50cm
2. The belt shall move at a speed of x m/s