Assignment 2
Robot Technology for Automation SKEM 4153
Semester 2 2019/2020

Assignment Tasks:

5 of you (or less) are in an Automation Team in an Engineering company. Your team has been requested by hospital to provide food delivery robots to assist nurses in food delivery at temporary hospital at MAEPS which has up to 400 beds to combat with Covid-19 pandemic. This is to reduce the interaction between nurses with patients. Figure 1 is the layout of Hall A, MAEPS which is the size of 160m x 60m. 400 beds are arranged in 25 cubical (16 beds in each cubical). Food delivery robot will use AGV/AMR (automated guided vehicle/autonomous mobile robot) to deliver the food and a robotic arm to pick up food from food distribution area to AGV.

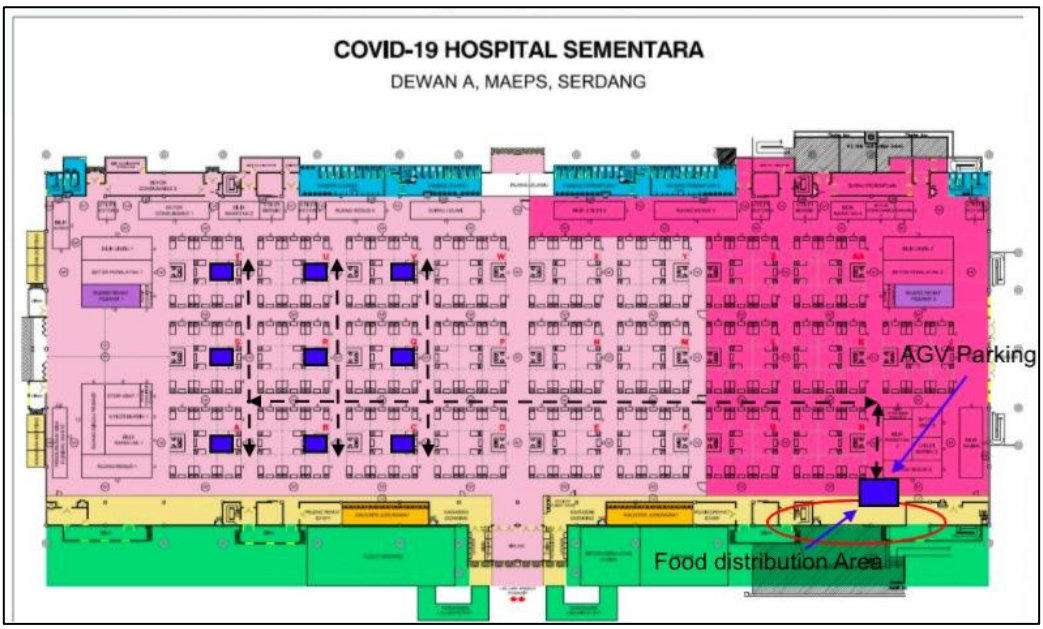

Figure 1: Hall A, MAEPS.

Figure2: Left picture shows nurse pick up food and place on AGV. Right picture shows the beds.

- MAEPS is a temporary hospital to deal with low risk Covid-19 patients.
- They need robotic and automation to automate the food collection and deliver to 9 cubicals.
- Following are the conventional process:
    - Nurse will pick up 16 packs of food and load on trolley.
    - He/she will push the trolley to the first cubical. Once delivered, he/she will walk back to the food distribution area to pick up another 16packs of food to deliver to another cubical.
    - Assume that the current trolley they have only allowed them to send 16 packs of food at one go.
    - They have to do this delivery for every breakfasts, lunches and dinners.
    - Other info which is not available, you can make your own assumption.

- Your manager requested you to prepare a simulation proposal to use automation and robotics in this process and to present to customer. Following are the requirements
    - Two Simulations
        - Use www.flexsim.com/ to show the overall simulation of food delivery service to all 25 cubicals.
        - Use https://www.universal-robots.com/download/?option=18940 to simulate the UR10 movement.
    - Robot
        - To use one unit of **Collaborative Robot UR10** from **Universal Robot a**t food collection area.
        - To use one unit of **Automated Guided Vehicle (AGV) Zalpha-MG-S** from **DF Automation & Robotics**.

Deliverables

You will need to submit **proposal, power point slide and simulation videos** on **14th May 2020** via **hardcopy** and **email** to cfyeong@utm.my (with title ***SKEM4153 Assignment 2***). The proposal should not more than 10 pages (print both sides) and should consist of following:

- Front page with members name
- Introduction (explain covid19, maeps, the operation, distance travelled, etc)
- Proposal with description of both simulations (include screen shot, cycle time, dashboard, etc)
    - Flexim
    - URSim or other robot simulator or real robot demo (ABB, Kuka, UR, etc)
- Conclusions

You will need to present with slide not more than 10 mins and 2 mins Q&A as in real proposal meeting with customers. The presentation should include introduction of current process, explain your proposal with Flexim (include info such as cycle time, waiting time, etc), explain how the robot movement (how you design the arm and program briefly), the improvement, ROI and why they must buy from you. Please download and edit the video if required to ensure your presentation is on time.

Marks Given

Items		**Marks**
Proposal and Presentation		50
Demo • **Very complex (25 marks)** • **Complex (20 marks** • **Average (15 marks)** • **Simple (10 marks)** • **Too simple (5 marks)** • **Not working (0)**	**Flexim**	25
	URSim	25

References:

- Mak Cik Kiah 19 robot video at HCTM
- Dol-E robot video at MAEPS: