Mission

The mission is an extension of the Quarantine delivery mission, only this time it supports multiple moose "workers". The mission is to deliver "packages" from house to house, by having a drone flying around and identifying the delivery positions. The initial mission given utilized only one moose robot to deliver the robots, however this was far from an optimal solution. The problem with this mission, was that the drone's tasks were much quicker to accomplish than the moose's tasks. This leads to a bottleneck with the delivery, where the mavic drone must either wait a little bit between each location or wait for a long time after finishing scouting the locations.

The solution I created for this was to add multiple more moose robots/vehicles. By doing this, the drone could send locations to each of them in turn, and there will always be an available moose to do the job. This greatly reduces the mission execution time.

Between each location the moose "delivers" to, it goes back to the start/base, and we can imagine that it fetches another package there to deliver to the next house.

This is an example of a heterogeneous mission, where the different types of robots complement each other very well. The mavic drone is much more effective than the moose to scout for the locations, as it can cover more ground flying. It also has sensors equipped for recognition, which the moose does not. This is one of the key features with heterogenous mission planning and execution, as the different robots can achieve different subtasks than the others. But on top of that, they all need each other to accomplish the overall mission, which neither could achieve alone.

There is also a hint of swarm robotics in this mission as well. If we take an isolated look at the moose vehicles, there is a bunch of robots with the same capabilities, working without much (or any in fact) knowledge about each other.

The mission source code can be found under web_interface/src/data.json

"missions" -> "DAT160 Assignment"

Video link:

https://youtu.be/ryL42dz4wSI