Progress Milestone #1
By: Emma Hughson (301356242), Khizr Ali Pardhan (301314376), Kai Ho Anthony Cheung
(301313531), and Scott Harrison (301156458)
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In the past 5 weeks we have met weekly to start development of our pipeline, drawing inspiration from Payams' Follow Ahead Github Repository. Initially we formulated our ideas and investigated reinforcement learning (RL), such as learning about various reward policies and technologies used to understand human's walking behaviour [1][2][1]. Currently, we are setting up Gazebo and ROS using scripts obtained from the Github Repository. We have run into some issues with not having access to appropriate graphics cards (i.e., nvidia) but we have contingencies laid in place (i.e., using 1 of the 4 personal computers in the groups which has a graphics card).

In the coming weeks we plan to have run the remaining follow ahead scripts and finalize our pipeline. We also plan to further investigate and implement RL algorithms and reward policies that will predict human's walking behaviour. Furthermore, randomization of obstacles will be implemented in Gazebo to assess the performance of our RL implementation. Finally, a detailed setup guide is also in the works to assist in not only setting up Gazebo/ROS but also detailing how the RL backend connects to the Gazebo frontend.

References

[1]O. Kilinc, Y. Hu, and G. Montana, "Reinforcement learning for robotic manipulation using simulated locomotion demonstrations," *arXiv [cs.LG]*, 2019
[2]W. Mi, X. Wang, P. Ren, and C. Hou, "A system for an anticipative front human following robot," in *Proceedings of the International Conference on Artificial Intelligence and Robotics and the International Conference on Automation, Control and Robotics Engineering - ICAIR-CACRE '16*, 2016.

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[1] Note: Here is a git repository containing research collected so far -> https://github.com/alik604/yet-another-friendly-companion/tree/main/papers