Meeting 10-24-2018: OmniCont Model

1. We discussed the current 'switch-block' setup and agreed that it was an acceptable method to validate the existence of the ROS-Param 'k'.
2. After discussing any possible changes to ‘k’, we realized that this may be subject to direct change or changes to ‘LQR’ constraints.
3. Given this, ‘k’ will remain a ros paramter, but we will be adding ‘LQR’ constraints as ROS params as well.
4. ‘LQR’ constraints will be initialized at some default value, which will produce a default ‘k’ value.
5. For clarity: ‘k’ and ‘LQR’ constraints will be ROS params. Changes to ‘LQR’ constraints will change the ‘k’ parameter. Changes to ‘k’ will not change ‘LQR’ parameters.
6. We discussed the possibility of separating the ‘LQR’ algorithm from the controller model, as two separate-dependent nodes. This will be examined in our design the next two days.

Task:

- Investigate usage of referenced models vs subsytems.
- Investigate usage of callbacks in code generation.
- Investigate use of LQR as function, not script.
- The controller may need to have updates to the "LQR" constraints (ex wheel size, mins/maxs). These updates should be updated via rosParams, which will
- Design the controller (using as much of Jies work as possible) around the constraints below.

Design:

- The goal is to have 145 students focus on the coursework, not on learning the ROS platform (too much overhead).
- We are summing the average ME student, who does not code outside of matlab. Any interaction between students and the ROS params shall be done through matlab.

Constraints:

- We want to have the entire controller working on the omnibot, to reduce the need for students having to run ros nodes on their machine (again, ROS platform overhead).
- Having the entire controller running on the PI, we want to reduce any unnecessary overhead. Static values should constants, not functions running continuously.

NOTE
Upfront it makes sense to use a callback to run a script to set those params (one time thing)
then our simulink only GETs the params (on every loop)

Or some variation of the above workflow^^^