Robotics Autonomous vehicle camp list of topics

**Day 1**

* Icebreaker – blind navigation
  + Something related to having students move around an area blindfolded with another student as a guide acting as the ‘computer’
    - Students think about what type of ‘data’ the computer will have to relay in order to efficiently navigate a space
* Intro to autonomous vehicles
  + 5 levels of
  + Waymo
  + Sensor technology

3Pi 2040 robots

* Why are we using them
  + Overview of their sensors
  + Demo programs
* Micropython essentials for the 3pi robots
  + LEDS
  + Sound
  + Motion
  + Buttons
* Project 1 – Robot Dance routine (Before lunch day 1)
* Overview of PID control
* Project 2 – Movement to distance/driving straight data collection
  + Goal 1 – figure out how to define 1 meter (or another unit) based on motion commands
  + Evaluate how well the motion command allows the robot to maintain a straight path
    - Simple move based on time
    - Move based on encoder values
    - Move based on a PID controller (custom code)

Day 2: