Shoe Stalker Project Proposal

* What is the main idea of your project? What topics will you explore and what will you generate? What is your MVP? What is a stretch goal?
  + Topics
    - Object detection
    - Object recognition
    - Navigation based on object location
  + MVP: find one particular shoe in a group of shoes stationery and go to it.
  + Stretch goal: find one particular shoe in a group of shoes and track it as it moves around
    - Control speed based on distance to shoes
    - Pick shoes out of a lineup
  + Stretch goal 2: map out each person’s location based on where they are
* What are your learning goals for this project?
  + Learn anything at all about opencv (neither of us has ever done it before, except for Jasper!)
  + Get a good understanding of how object detection and object recognition work
  + Learn what pre-existing opencv things there are, and how you can find them.
* Given that the project will be three weeks long, describe what you'd like to have complete at the end of each week.
  + Week 1: Get video from the neatos. Find key points on shoes and in images.
  + Week 2: Detect shoes in image from database.
  + Week 3: Move towards shoes. If we have time, implement stretch goals.
* What frameworks / algorithms are you planning to use? (if you don't know enough yet, please outline how you will decide this question during the beginning phase of the project)
  + We are probably going to find key points in the images but do not yet know which algorithms we will use specifically.
  + To decide this we think we will do a significant amount of looking into these algorithms and ways that this is done. This will meet the learning what opencv packages exist learning goal.
* What do you view as the biggest risks to you being successful on this project?
  + Scheduling times we can meet and work together may be hard
  + Heading down a rabbit hole into researching something and not starting early enough
    - Hopefully we can get around this by figuring out a more detailed schedule when we start.
* What might you need from me for you to be successful on this project?
  + Generally, it would be good to have time to talk to you in each class to check in on progress.
  + Generally troubleshooting.
  + Advice if we get stuck in a rabbit hole or are not meeting our learning goals (maybe).

Possible approaches:

* Train algorithm with shoe logos? (determining if image contains a shoe)
  + Use RGB value ratios to train as opposed to color values to determine color (brightness reasons)
* Find specific persons pair of shoes (determine if image is of a specific shoe) by using key points
* Going towards the shoe
  + 1. Use the lidar and camera to determine how far away the person is, then go towards them in a straight line.
  + 2. Know the size of the particular shoe, then use the camera alone to determine how far away it is and go towards it.