I have a few different ideas on how to solve this problem. My number one solution is pretty ambitious, but I’m very excited about it. I’m going to attempt to solve this problem through machine learning! Machine learning algorithms are incredible at finding hidden patterns where humans struggle to find said patterns. I believe that a machine learning algorithm will, after being sufficiently trained, will be very good at packing these boxes. The metric for what makes a box well-packed is simply how much space there is in the box compared to how much space is filled up in the box.

When this inevitably doesn’t go very well, my fall back is to do a simple any fit brute force algorithm. This algorithm finds the first spot in all available open boxes and places it into said space, if the item cannot fit in any box, then a new box is opened. I like this one the best because I feel it will end up finishing very quickly, since best fit prioritizes finding the best current spot available. I like this idea a lot because I want my algorithm to be speedy.

If this solution also falls apart, I plan to write an algorithm that gives every single item its own box. I know this would be as inefficient as it can possibly get, but it would certainly be the fastest algorithm!

I am excited to work on my implementation because I believe I have a very unique idea on how to implement this. My plan is to use a 3-dimensional array in order to simulate the space inside the box. I like this idea a lot because it makes it incredibly easy to visualize what is happening. Being able to see into the box and know exactly what is happening is important to me so that I can understand what is happening quicker and easier, but I also believe that it will enhance the implementation of the algorithm because I will have a better understanding of what is happening. It is a win-win in my opinion!