**Problem 1: Learn to Play Pool**

Basically, the system's goal is to take a single shot in pool and sink a ball (like you would when playing pool). We don't need it to play a full game, just learn to sink a ball given a random configuration of balls on the table. Although maybe we can teach it to play if we need to increase the difficulty.

This would require a machine which can move and rotate around the white ball to get the right angle for the shot, and then control the strength of the shot. This machine already exists, so it is possible.

It would also require a camera above so the system can view the whole table.

**Problem 2: Maze Solver**

Basically we train an algorithm to solve a range of complexities of mazes. Application can be in the form of a simulation or physical robot with a camera.

**Problem 3: Crash Cost Recognition**

Deep learning algorithm which analyses the severity of a car accident via image recognition and provides the user with an estimated quote as to the cost of the accident. This would use information gathered from relevant insurance companies to train the system.

**Problem 4: Sort Items on a Production Belt**

A production belt scans items to identify desirable and undesirable items and then separates them. This machine already exists but uses infrared scanning.

We would use deep learning to improve the selection process to use something like a camera and to capture what's on the belt and run it through our algorithm to sort undesired products based on the algorithm classification rather than using infrared sensors that are restricting the system to only a number of substances that can be rejected by the system meaning if another object like a rock passes through it might not be detected by the IR sensor whereas an algorithm with a trained model has specific weight that accepts the desired good and reject the others.

**Problem 5: Subset Mathematical operation problem**

-For this problem you are given a list of N values and a target value T.

- Now what we want is to ask ourselves whether there is a ***subset***of the **N values** of which the **sum** is exactly **equal** to the **Target T.**

Example:

Given: N = 5 value and Target T = 17

N = {10,1,8,2,5}

NOTE: Complexity is when we going to add more Mathematical operations (instead of addition only)

-The question we should ask ourselves is whether from the given list, are there values that we can add up (including all forms of operation one can use to get to the target value) and give us the target value. The answer is **Yes!!!!(for the given example)**

**Answer =** 10 + 2 + 5 = 17

-But are we always going to have the same case with other list of values, NOPE!

-It should also be noted that the possibilities in the above given subset, whether the value is in the subset or not, is 2x2x2x2x2 = 2^5 = 32 possible subset.

-Now what if we have a list of N=100 value, then the total is 2^100 = 1.27x10^30 possible subset.

Task:

* Rather than a yes or no a subset exist in a given list.
* Let us find a subset which is as close as possible to the target value T, but not larger.
* One can apply any **Mathematical operations** to the List to get to the target value.