Machine Learning Problem Identification		
Domain	Problems	Difficulty Level (Easy-Medium-Hard)
Healthcare	**Mental Health Monitoring:** Extensive Analysis and case studies from psychological evaluations can serve as data that can be used to map a mixture of symptoms and descriptions to mental state. A simple example: Sad, anxious, empty can be mapped to Depression. (Difficult to solve)	**Hard**: Data collection and formatting for the ML algorithm is easy, however it will be difficult to achieve high accuracy because mental health can be a case to case situation and will most likely require a vast and unique data set to build a 'smart' machine.
Healthcare	**Early Disease/Condition Diagnosis:** Using medical data from a disease such as description and symptoms can be used to build an accurate machine for early diagnosis to increase chances of prevention. (Difficult to solve)	**Hard**: This ML problem can vary for every case depending on the complexity of the condition. For Example: Cancer detection can be a very difficult task since early detection data is probably small in quantity and accuracy.
Education	**Career/Course Selection:** Many young students can be confused on their educational path and future. Using a student's performance history in a multitude of courses and character traits, a ML algorithm can be built to recommend future courses and career paths. (Can be solved)	**Easy**: All schools already have student performance data recorded and can also perform trait evaluations through the inspection of teachers. It is also fairly easy to find a correlation between career paths and performance/ traits. Ex: Strong math and english, confident and outgoing:may be recommended to business courses/career.
Education	**Accommodative Learning System:** For students looking to improve in a subject such as math, an adaptive online system can be created that follows a teaching and testing regiment which will adapt the levels and difficulty based on every answer given. (Can be solved)	**Easy**: It can follow a simple check to see if a certain difficulty of questions are being successfully completed before moving on to the next level.
Banking	**Personalized Credit Limit**: Usually credit limits are adjusted on request or if a credit score / financial situation improves. This process can be automated with an optimized credit score based on financial profile and credit history (using data from other cases). (Can be solved)	**Easy**: Banks will have an abundance of data that can be used for the training of an algorithm.
Banking	**Dynamically Optimize Interest rate for Loans or Mortgages:** Interest rate can be a deterring factor in terms of attracting borrowers. A machine can be built to find an Interest rate that is optimal based on previous	**Medium:** Even with the data available the difficulty will be in terms of finding a balance between attracting borrowers vs managing risk.

	borrowers that will keep attraction high.	
E-Commerce	**Personalized Product Recommendation**: Widely utilized based on things such as browsing history, but can also be created for local trends for product browsing. Ex: finding data that supports higher fishing rod sales near a lake area, thus giving more fishing rod recommendations in the lake area. (Can be solved)	**Hard**: Collecting data and trends from locations on products may be very difficult. Therefore it will be difficult to create an adaptable machine.
E-Commerce	**Countering Diminishing Customer Engagement:** Customer activity and purchase decline can correlate with cancellation and an overall high risk customer. Inspecting features such as activity, purchases, and browsing can help prevent loss of a customer through personalized offers, promotions or engagement. Ex: detecting low netflix activity, therefore sending promotions or show recommendations to prevent cancellation. (Can be solved)	**Easy**: Few number of features to examine, which are clear cut in terms of their relationship with customer engagement.
Gaming	**In Game Enemy movement:** Having games with intelligent enemies can make that game more challenging therefore making it more fun. The enemies will react based on a certain move that the user makes. (Can be solved)	**Hard**: It is very difficult to create an in game enemy for new generation games that should be able to react to a hundred different possible moves. Let alone creating multiple unique enemies with their own moveset. It is very difficult to make an in-game enemy seem intelligent and hiding its patterns.
Gaming	**Dynamic Gaming Style Adjustment:** A new genre of gaming in this generation is choice based gaming. To achieve progress in this genre, games can adapt from simple text choices to gameplay style choices. Examining a user's gameplay choices within an environment to decide the type of gameplay moving forward in the game. Ex: if a user makes stealthy moves and completes missions with stealth, provide a continued stealth approach rather than a more guns blazing style. (Can be solved)	**Medium:** Clustering a multitude of choices with a certain game style or choice can be medium difficulty because of the varying amount of choices and styles and the complexity of the game.