**Q1. Machine learning is often referred to as an ill-posed problem. What does this mean?**

* Highlight possible patterns between descriptive features + target features.
* ABT has the training set.
* Multiple models can be consistent with the training set.
* Which one to use?
* Not always guaranteed enough information to choose a single best model.
* Machine learning algorithm must somehow choose one of the suitable models as the best.

**Q2. How do machine learning algorithms deal with the fact that machine learning is an ill posed problem?**

* Introduce an inductive bias.
* A set of assumptions.
* Hypothesis to use when the machine learning algorithm is learning.
* Guiding the Machine Learning algorithm to prefer one model over another.
* It is a prerequisite to all machine learning algorithms.

**Q3. An online movie streaming company has a business problem of growing customer churn. As a data analyst [1] Create a list of ways in which predictive analytics could be used to help address this business problem. For each [1.1] proposed approach, [1.2] describe the predictive model that you will build, [1.3] how the model will be used by the business, and [1.4] how using the model will help address the business problem.**

Churn Prediction

* Build a predictive model that predicts the likelihood of a customer leaving within 3 months.
* Run every month – identifying customers who the business should make offers/bonus to.
* Accurately predict the likelihood of a customer leaving.

Churn Explanation

* Identify factors that correlate to customers cancelling their subscription.
* The business could use these factors to change offering/services or how it manages customers.
* Model will identify features impacting churn.

Next Best Offer Prediction

* Next best offer model that predicts the effectiveness of different bonuses to entice a customer not to leave.
* When a customer contacts a company, they run the model against the customer data to predict what’s good enough to make you stay.

Enjoyment Prediction

* If customers enjoy the service, they are less likely to leave.
* Predict how for example the introduction of a new service “personalisation” could impact a customer’s enjoyment factor, therefore they will be less likely to leave.
* The model would predict how happy a service would make a customer.