Congratulations! You passed!

TO PASS 80% or higher

Module 1 Review

LATEST SUBMISSION GRADE

99.01%

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1. Which are ways that forecasting is often misunderstood, according to the instructor? Select all that apply.

   1 / 1 point

   ☑ Misinterpreting 70% odds as an extremely good chance of winning

   ✓ **Correct**

   70% odds is actually closer to a toss-up than a sure-thing.

   ☐ Misinterpreting a forecast of one candidate getting 70% of the votes as a good chance of winning.

   ☑ Misinterpreting 70% odds of a candidate winning as equivalent to how much of the votes the candidate would get

   ✓ **Correct**

   If you've forecasted a candidate will get 70% of the votes, that may very well translate to more like a 99% probability of winning (i.e. much higher than 70%). Given this forecast, maybe in reality they would end up getting less, like 60% – but that's still a likely electoral college win. And the chances are particularly slim that the outcome would land even further away from an expected 70%, down to below 50%. So, with a forecast of one candidate getting 70% of the votes, a loss of the election would be a long shot, perhaps only a 1% chance, i.e. a 99% probability of winning.

2. Which of the following are examples of what might be predicted by predictive analytics rather than by forecasting? Select all that apply.

   1 / 1 point

☐ How many active users will a product have at the end of this quarter?

☐ Which presidential candidate will win more votes in Ohio?

☐ What is the overall total number of sneakers that will be purchased next month in Nebraska?

☐ When will the next recession hit?

☐ How will the economy fare?

☑ Given a particular user's current shopping basket, which products are they most likely to buy now?

✓ **Correct**

☑ Which ad should we serve to a given user right now?

✓ **Correct**

☑ Which user is a likely perpetrator of fraudulent activity?

✓ **Correct**

☑ Which individual consumers are most likely to subscribe to a given service?

✓ **Correct**

3.   **1 / 1 point**

Choose the correct set of terms:

_____ is the field of study that gives computers the ability to learn without being explicitly programmed, and _____, a related concept, is technology that learns from experience (data) to predict the future behavior of individuals in order to drive better decisions.

○ Big data, predictive analytics

○ Data science, big data

◉ Machine learning, predictive analytics

○ Data science, machine learning

✓ **Correct**

4. True or False: Machine learning and big data are synonyms.   **1 / 1 point**

○ True

◉ False

✓ **Correct**

   Big data is a broad umbrella term that is generally taken to include machine learning as well as various other methods for analyzing data.

5. True or False: All uses of predictive analytics are also considered a use of machine learning, but not the other way around.   **1 / 1 point**

◉ True

○ False

✓ **Correct**

   Predictive analytics is a term often used for business applications of machine learning, but some applications of machine learning, such as face recognition, are not considered to be examples of predictive analytics.

6. Select all statements that are true about the <u>second</u> stage of applying machine learning:

0.833 / 1 point

☐ Predictive scoring can produce multiple outputs given a single input.

☐ The product of the second stage of applying machine learning is the predictive model derived by applying a machine learning process on the data.

☑ The process is typically done in real time, for one individual at a time.

✓ **Correct**

Predictive scoring of individuals is indeed often done in real time -- for one individual at a time. The model that was generated in the first stage of applying machine learning is now used to score that individual, to generate a predictive score or probability as to the outcome or behavior we're predicting.

☑ Model deployment is the active use of the model "in the field" to generate scores that affect operational business processes.

✓ **Correct**

When the model is being used for scoring, this is often called "model deployment," since that's when a model is actually being used "in the field" to generate scores that affect operational business processes.

☑ Predictive scoring is applied to multiple inputs at a time.

❗ **This should not be selected**

The model applies to only one individual at a time. If you have 100,000 customers you want to score, the computer will apply this process 100,000 times, predictively scoring each customer.

☐ The second stage of applying machine learning is to apply what you've learned.

7. Fill in the blank:

1 / 1 point

_____: A factor (i.e., a characteristic or attribute) known about an individual, such as demographics like age and gender, and behavioral variables such as the number of prior purchases. A predictive model takes such factors as input. NOTE: the main acceptable answer is two words, although one-word variations are also accepted.

Input variable

✓ **Correct**

8. Which of the following describes RFM (recency, frequency, monetary)?

1 / 1 point

⦿ A segmentation scheme based on three variables that creates groups of customers, but does not adapt according to the data.

◯ An advanced predictive modeling technique that adapts to the data.

◯ A performance measure commonly used to evaluate predictive models.

◯ A segmentation scheme based on five to 10 variables, depending on the data.

✓ **Correct**

9. Continuing from the early practice question about targeting ads for a shoe manufacturer, let's improve ad targeting with machine learning. You once again have a group of 500,000 potential customers and it costs 5 cents per individual to include them in an online advertising campaign. You ran a test campaign across a sample of 10,000 randomly selected customers to generate data containing both positive and negative examples (click and didn't-click). With that data, some used for training and some for testing, you developed a predictive model that was then used to score the entire list of 500,000 (none of which were in the sample). Ordering the list, you selected the top quarter (25% of the list) predicted as most likely to click if advertised to, showing a lift of five -- i.e. a 5% click rate, compared to the overall click rate of 1%. Assume that of those that click, the same buying rate holds -- some buy and some do not, leading to an average profit of $25 per click.

1 / 1 point

 What would be the bottom line profit advertising to only the top quarter of the 500,000-individual group?

◯ $20,000

◯ $50,000

⦿ $150,000

○ $500,000

✓ **Correct**

The amount earned is $25 for each of those who click. This time 5% clicked, but we only advertised to 25% as many -- .25 * .05 * 500,000 = 6,250 clicks, each earning $25 = $156,250. The amount spent is 5 cents each for 25% of 500,000, which comes to $6,250. So earned - spent = $150,000.

10. How is churn modeling different from response modeling? Select all that apply.   **1 / 1 point**

☑ Churn model targets retention offers to help keep existing customers from leaving. Response modeling targets to acquire new customers or to sell to existing customers.

✓ **Correct**

By predicting who's at risk of leaving, churn modeling targets retention. By predicting which will convert as a result of a campaign, response modeling targets other kinds of marketing campaigns.

☑ Churn modeling predicts, "If not contacted, will the customer cancel?". Response modeling predicts the outcome if we *do* contact the customer.

✓ **Correct**

Churn modeling involves predicting who's at risk of leaving without intervention whereas response modeling involves predicting what happens when we intervene and contact the customer.

☐ Churn modeling predicts, "If contacted with a certain promotional offer, will the deferred customer come back?". Response modeling predicts which individuals are most likely to purchase, given that they are not yet customers.

☑ Churn modeling helps retain existing customers by predicting what happens without marketing contact. Response modeling helps acquire new customers by predicting what happens with marketing contact.

✓ **Correct**

By predicting who's at risk for leaving, churn modeling is used to help retain existing customers whereas response modeling is applied on new customers, predicting what happens with market contact, with the goal of acquisition.

- [ ] Churn modeling targets new customers. Response modeling targets existing customers.

- [ ] Churn modeling helps bring back deferred customers by modeling what happens with marketing outreach. Response modeling helps bring on new customers by identifying which ones are most likely to convert.

11. True or False: If a customer is more likely to churn than average, contacting them with a retention offer will always increase the chance they'll stay.   **1 / 1 point**

- ( ) True
- (●) False

✓ **Correct**

Retention offers sometimes backfire, triggering customers to stay who would otherwise have stayed if left uncontacted.

12. True or False: Predictive analytics can drive the choice between an active and passive treatment for each customer – such as whether or not to make contact – but it cannot drive the choice between treatments that are all active. One treatment option must be the passive treatment, i.e., a lack of contact.   **1 / 1 point**

- ( ) True
- (●) False

✓ **Correct**

For some applications, such as selecting which ad to show on a webpage, there is no passive option, but predictive analytics still can be applied.

13. True or False: A risk model with a lift of 2 is not effective enough to provide business value.   **1 / 1 point**

- ( ) True
- (●) False

Correct

Even a segment with a lift lower than two can divide a portfolio into two groups that differ greatly in their risk levels, depending on other factors, such as the overall risk level across all individuals, and the size of the segment.

14. For <u>response modeling</u>, as used either for marketing or as used by non-profits, what is predicted and what business decision is driven with that prediction? Select all that apply.

1 / 1 point

☑ Predict <u>whether the customer will purchase if contacted</u>, in order to decide <u>whether to include them for marketing contact</u>.

✓ **Correct**

☐ Predict <u>whether the customer will defect or leave</u>, in order to decide <u>whether to extend a retention offer to them</u>.

☐ Predict <u>whether an individual will default on a loan</u>, in order to decide <u>whether to approve their application for credit.</u>

☐ Predict <u>what next product the customer will buy</u>, in order to decide <u>which product to recommend</u>.

☐ Predict <u>whether the customer will click on</u> an online ad in order to decide <u>which ad to display</u>.

☐ Predict <u>whether a lead will convert</u> in order to <u>decide on sales resource investment</u>.

☑ Predict <u>whether an individual will donate if contacted</u>, in order to decide <u>whether to solicit them for donations</u>.

✓ **Correct**

Fundraising can be targeted with a response model just the same as for-profit marketing campaigns.

15. True or False: A machine learning model is always designed to predict the future.

1 / 1 point

○ True

● False

✓ **Correct**

Predicting the future is not always the goal, but putting probabilities on an unknown (regardless of whether or not it is set to occur in the future) *is*.

16. True or False: Machine learning has only been commercially deployed by a few companies to drive decisions for thousands of customers, but it has potential to be used a lot more.

1 / 1 point

○ True

● False

✓ **Correct**

Machine learning drives millions of decisions a day.

17. True or False: According to the white paper reading assignment, predictive analytics can help meet today's escalating consumer expectations by way of greater relevancy, better products and services, improved transaction integrity, and lower prices.

1 / 1 point

● True

○ False

✓ **Correct**