

Your grade: 100%

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1. In which phase of the AI for Good project framework should you determine whether AI can add value as part of a solution? 1 / 1 point

- ☐ Implement.
- ☒ Explore.
- ☐ Design.
- ☐ Evaluate.

✔ Correct

That's right! In the explore phase, in addition to engaging with stakeholders and defining your problem statement, you need to determine whether AI can add value to your solution.

2. Companies that provide wind power to the electrical grid need to be able to make reliable predictions of wind power output because: (Select all that apply) 1 / 1 point

- ☐ Nowadays, most electric companies are serving the vast majority of demand with wind power, so reliable predictions are essential.
- ☒ Wind power can be unpredictable, so having better forecasts of wind power output helps electrical utility companies plan to balance input power sources into the electrical grid.

✔ Correct

That's right, wind power is inherently unpredictable, and so companies that provide wind power need to be able to make reliable forecasts of power output.

- ☒ Reliable predictions of wind power output increase the value of wind power as an alternative to fossil fuels.

✔ Correct

Wind power providers can charge more for the energy they provide when they can make advanced commitments to the electrical grid.

- ☐ Having reliable wind power predictions helps electrical companies generate more energy from fossil fuels.

3. Which of the following is necessary for AI to play a role in addressing a problem? 1 / 1 point

- ☐ Access to a ready-to-use dataset.
- ☒ Access to or the ability to acquire the data that you need to develop and test potential models.
- ☐ The existence of a public dataset related to your problem definition.
- ☐ A successful track record of other groups using AI for the same problem.

✔ Correct

Determining whether AI could add value to any solution depends on what kind of data you have access to.

4. What is the purpose of computing descriptive statistics for the numerical columns in the Spatial Dynamic Wind Power Forecasting (SDWPF) dataset? 1 / 1 point

- ☐ To determine which rows of data you need to drop.
- ☐ To predict the wind energy output of the entire wind farm.
- ☒ To understand the characteristics of the data and look for anomalies.
- ☐ To find the top 10 performing wind turbines.

✔ Correct

You should do this in the Explore phase of any data related project.

5. What are some of the reasons for first developing a baseline model for any AI project you want to work on? Select all that apply. 1 / 1 point

- ☒ It allows you to set a benchmark for performance that you can use for comparison to the performance of more complex models.

✔ Correct

Yes, a simple baseline model can help you evaluate the performance of your machine learning models.

- ☒ A simple baseline model may prove to be sufficient for the task you aim to perform.

✔ Correct

Yes, complex machine learning models are not always required and a simple baseline model may deliver the performance you need.

- ☒ A simple baseline model often allows for more interpretable results.

✔ Correct

Simple models are often more interpretable in terms of exactly how the model produces the results it does, which can be a benefit in many projects.

6. In the first wind power design phase lab, which of the following was true of using a neural network model for estimating wind power output compared to the linear baseline model? 1 / 1 point

- ☒ The neural network model was able to learn nonlinear patterns in the data.

✔ Correct

Compared to the linear baseline model in this lab, the neural network was able to learn nonlinear patterns, which is vital for predicting wind power output using the features in the dataset.

- ☐ The neural network model was trained using additional features beyond those used to fit the linear baseline model.

- ☒ The neural network performed better as measured by mean absolute error, compared to the linear model.

✔ Correct

Yes, the neural network provided a better fit to the data.

7. Which of the following is a use case for a sequence-to-sequence model? Select all that apply. 1 / 1 point

- ☒ Translating text from Haitian Kreyol from Haiti to English.

✔ Correct

That's right, in language translation, you have an input sequence; the words or characters in the first language, and an output sequence; the words or characters of the target language.

- ☒ Completing a poem when you provide the first few words.

✔ Correct

Yes, in this case, the input sequence is the first few words you enter, and the output sequence is the rest of the poem.

- ☒ Given historical hourly measurements of air pollution concentrations in a city, estimate the future concentration values.

✔ Correct

Estimating future air pollution concentrations is a potential extension of the project in the first course of this specialization, "AI and Public Health".

- ☒ Question answering like in the case of a chatbot.

✔ Correct

Yes, here the input sequence is the question and the output sequence is the answer.

8. Why is it important to have a separate “test set” of data when splitting your data into train, validation, and test sets? 1 / 1 point

- ☒ To test how your model performs on data that it never saw during training.
- ☐ To select the best model among different alternatives.
- ☐ To evaluate the performance of the model during training.

✔ Correct

For most supervised machine learning problems, you will separate part of your data, the test set, to evaluate the model's ability to generalize to previously unseen data.

9. What critical input feature did you need to “synthesize” in order to get your forecasting model working satisfactorily? 1 / 1 point

- ☒ Synthesized wind speed forecasts.
- ☐ Synthesized uncertainty values for active power output.
- ☐ Synthesized temperature forecasts.

✔ Correct

Indeed, and it's possible that you could have done even better with forecasts of other meteorological variables!

10. In your wind power prediction project, you used mean absolute error to evaluate different models' performance. Which of the following might be the success metrics or criteria by which you could assess your entire project assuming you moved through to implementation and deployment of this system? 1 / 1 point

- ☐ The relative improvement over a baseline of random guessing.
- ☒ The amount by which you increase the value of wind energy by increasing its predictability.

✔ Correct

Yes, by developing a successful model you will have made wind power more predictable and thereby more valuable.

- ☒ The amount by which your project serves to reduce the dependence on fossil fuels.

✔ Correct

Your project would be implemented at some particular power grid where a measurable reduction in fossil fuel energy consumption could be interpreted as a measure of success for your project.