**Feature Importance**

**Individual Feature Importance**

**Interpreting Deep Learning Models**

**Video:** Interpreting CNN models
2 min

**Lab:** Lecture notebook: Gradcam (part 1)
1h

**Video:** Localization maps
4 min

**Video:** Heat maps
3 min

**Lab:** Lecture notebook: GradCam (Part 2)
1h

**Quiz: ML Interpretation**

**Practice Quiz:** ML Interpretation
6 questions

**Assignment: ML Interpretation**

**Acknowledgments**

## Congratulations! You passed!

**TO PASS** 80% or higher **PRACTICE QUIZ • 30 MIN**

Keep Learning

**GRADE**
100%

# ML Interpretation

# ML Interpretation

**TOTAL POINTS 6**

**Submit your assignment** Try again

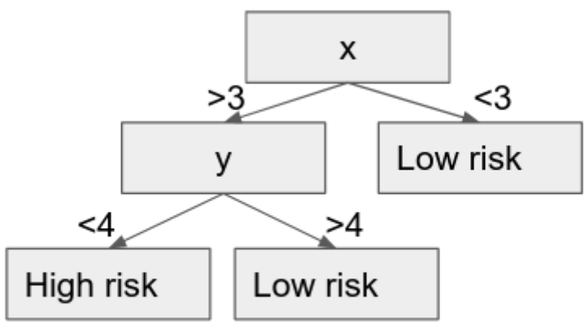
**Receive grade** **Grade**
100%

**TO PASS** 80% or higher View Feedback

We keep your highest score

1. You train the random forest pictured below and it gets a c-index of 0.90. After shuffling the values for x, your dataset is the following. What is the variable importance for x? **1 / 1 point**

| ID | x | y | death |
|---|---|---|---|
| 1 | 2 | 3 | 1 |
| 2 | 4 | 5 | 0 |
| 3 | 1 | 2 | 1 |
| 4 | 5 | 2 | 0 |




- -0.05
- 0.1
- 0.5
- 0.5
- 0.65

**Correct**

Explanation: We need to calculate the new C-index. The prediction for 1 is low risk, the prediction for 2 is low risk, the prediction for 3 low risk, and the prediction for 4 is high risk. The permissible pairs are (1, 2), (1, 4), (3, 2), (3, 4). All of these are risk ties except for (3, 4) and (1, 4), which are not concordant. Therefore the c-index is 0.5(2) / 4 = 0.25. Therefore the difference between the original C-index and the new one is 0.9 - 0.25 = 0.65, so the answer is D.

2. Say you have trained a decision tree which never splits on a variable X. What will be the variable importance for X using the permutation method? **1 / 1 point**

- 0.5
- A random number between 0 and 1
- 0
- There is too little information to say

**Correct**

Explanation: You might think that we don't have enough information to say since you don't even know the metric being used to compute the variable importance. However, since the tree never splits on X, we know that even if we permute the values of X in the dataset, this will never change any prediction. Therefore, no matter what metric we use the variable importance will be 0, since there will be no change in the model output. Therefore the answer is C.

3. We have the following table the output of a model f on an example using subsets of the variable. What is the Shapley value for s_BP? **1 / 1 point**