Quiz break

Q1-1: K-NN algorithms can be used for:

- A Only classification
- B Only regression
- C Both
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Q1-2: Which of the following distance measure do we use in case categorical variables in k-NN?

- A Hamming distance
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Q1-3: Consider binary classification in 2D where the intended label of a point \( x = (x_1, x_2) \) is positive if \( x_1 > x_2 \) and negative otherwise. Let the training set be all points of the form \( x = [4a, 3b] \) where \( a, b \) are integers. Each training item has the correct label that follows the rule above. With a 1NN classifier (Euclidean distance), which ones of the following points are labeled positive? Multiple answers.

- \([5.52, 2.41]\)
- \([8.47, 5.84]\)
- \([7,8.17]\)
- \([6.7,8.88]\)
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- \([5.52, 2.41]\]
- \([8.47, 5.84]\]
- \([7, 8.17]\]
- \([6.7, 8.88]\]

Nearest neighbors are
\[4,3\] => positive
\[8,6\] => positive
\[8,9\] => negative
\[8,9\] => negative

Individually.
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Q2-2: True or False
Maximum likelihood estimation is the same regardless of whether we maximize the likelihood or log-likelihood function.

• A True
• B False
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• A True
• B False
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Q2-3: Suppose the weights of randomly selected American female college students are normally distributed with unknown mean $\mu$ and standard deviation $\sigma$. A random sample of 10 American female college students yielded the following weights in pounds: 115 122 130 127 149 160 152 138 149 180. Find a maximum likelihood estimate of $\mu$.

- A 132.2
- B 142.2
- C 152.2
- D 162.2
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