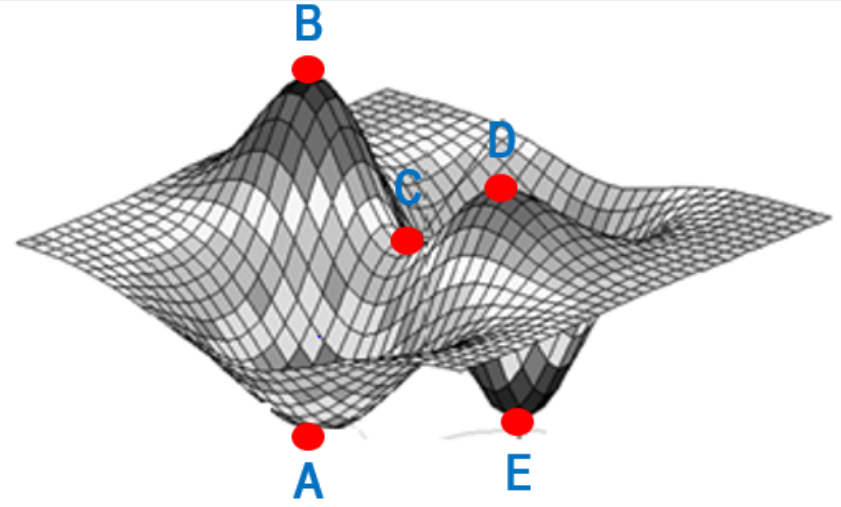
FIT3181 Deep learning - S2 2022 MUM

Started on	Monday, 12 September 2022, 11:44 AM
State	Finished
Completed on	Monday, 12 September 2022, 11:47 AM
Time taken	3 mins 17 secs
Grade	**3.00** out of 9.00 (**33**%)

Which points are local maxima?



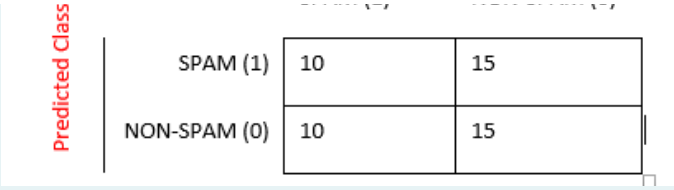
Select one:

- a. A,E
- b. C
- c. A,C,E
- d. B,D

The correct answer is: B,D

Consider an email spam detection problem where the task is to predict spam emails. The following table summarizes the confusion matrix on the test dataset

	TRUE LABELS	
	SPAM (1)	NON-SPAM (0)



Predicted Class		
SPAM (1)	10	15
NON-SPAM (0)	10	15

Select one or more:

- [ ] a. With just the information given, it is not possible to calculate the Area Under the Curve (AUC)
- [x] b. The true negative rate (TNR) is 15/(15 + 15) = 50%
- [ ] c. It is not possible to calculate the sensitivity in this case
- [x] d. The prediction accuracy on this test dataset is (10+15)/(10 + 10 + 15 + 15) = 50%
- [x] e. The true positive rate (TPR) is 10/(10 + 15) = 66.66%

The correct answers are: The prediction accuracy on this test dataset is (10+15)/(10 + 10 + 15 + 15) = 50% , The true negative rate (TNR) is 15/(15 + 15) = 50%, With just the information given, it is not possible to calculate the Area Under the Curve (AUC)

Assume that the tensor before the last tensor of a CNN has shape [32, 32, 32, 10] and we apply 5 filters each of which has the shape [5,5,10] and strides= [3,3] with padding = 'same' to obtain a tensor. What is the shape of the output tensor?

- (●) a. [32,10,10,5]
- ( ) b. [32,16,16,5]
- ( ) c. [10,10,5]
- ( ) d. [32,11,11,5]

The correct answer is: [32,11,11,5]

Given a DL model $f(x; \theta)$ parameterized by θ where $f(x; \theta)$ represents the prediction probabilities of x associated with a ground-truth label $y \in \{1, \ldots, M\}$, we find an adversarial example by $\mathbf{x_{adv} = argmax_{x' \in B_\epsilon(x)} l(f(x'; \theta), y)}$. Which statements are correct?

Select one or more:

- [ ] a. We maximally increase the chance to predict x with label y.
- [x] b. We maximally increase the chance to predict x with any else label y'≠y.
- [ ] c. It is an untargeted attack.
- [ ] d. We maximally decrease the chance to predict x with label y.
- [ ] e. It is a targeted attack.

The correct answers are: We maximally decrease the chance to predict x with label y., We maximally increase the chance to predict x

with any else label y'≠y., It is an untargeted attack.

◄ Assignment 01: Machine Learning, Deep NNs, and CNNs

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