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Question for Paper 13,14

Paper: **On Random Weights and Unsupervised Feature Learning**

1. Circular convolution (wrap around) differs in performance from valid convolution only in the edges. The key feature(s) circular convolution showed by optimal input 'x' in the 'random weights convolutional square pooling architecture' is/are
  - a. The best input comes from the frequency of the maximum magnitude in the filter, making the architecture - frequency selective
  - b. The phase  $\phi$  is unspecified making the architecture translationally invariant.
  - c. Both a and b
  - d. Only a translational invariance does not affect the feature learning process in the pooling layer

**Answer: c. Both a and b**

NB: Only the learning algorithm matters than the finetuning the architectural parameters and architecture plays an important role in feature representation of the object recognition.

Paper: **Curriculum Dropout**

1. Curriculum Learning is "small start" model that slowly increases the complexity of the training example and this learning stops when the learning time  $\lambda$  reaches 1 from 0. The best way to do regularization (Curriculum Dropout\*) is
  - a. Adjust the weights  $W_{\lambda}$  initially and not keep it fixed and additionally the parameter learning time  $\Theta(t)$  should be within 0.5 to 0.9 ( $\Theta_{\text{bar}}$  which is the retain probability of active neurons over retained neurons) is a good idea.
  - b. Don't adjust weights  $W_{\lambda}$  initially but, At  $\lambda = 0$  the  $\Theta(0) = 1$  and no entry of the sample is suppressed ; and when  $\Theta$  starts to decrease to  $\Theta(\lambda T)$  i.e 0.99 1% of the samples are suppressed is a good idea.
  - c. Don't adjust weights initially and as  $\lambda$  grows  $\Theta(\lambda T)$  decreases and many samples being suppressed is a good idea as this does not complicate the task of regularization.
  - d. None of the above

**Answer a**

**NB:** Curriculum Dropout\* – suppressing samples as the training progresses and not at the early starting stages of training