

**Artificial Intelligence**

**Module 5 Assignment**

[support@intellipaat.com](mailto:support@intellipaat.com)

+91-7022374614

US: 1-800-216-8930 (Toll-Free)

**Assignment Questions**

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**Tasks to be performed:**

1. Briefly describe the disadvantages of Flattening (as first layer or after Input) and how do you overcome those issues ?
2. Stanford Vision department, has collected and annotated images of 120 breeds of dogs from ImageNet. [Dataset can be found here](https://www.kaggle.com/c/dog-breed-identification).
3. Prepare an EDA sheet & explain what you understand from this data. What would be your approach?
4. With a limited number of training images per class, what extra steps will you incorporate for a good model?
5. Iterate over and try different architecture and topologies and preserve the results of each experiment using TensorBoard. Also, save major metrics in an Excel (or try W&B).
6. Achieve the above problem on Kaggle itself and submit your results.
7. What are Convolutional Neural Networks and how are they better than regular only Fully Connected Neural Networks?
8. The major components of a CNN topology are Filter/ Kernel, Strides, etc. Explain mathematically the output of a single CNN layer and how it is impacted by strides?
9. For a single channel image, size (9x9) and a filter of size (2x2) and stride (2x2), calculate the output. Is padding required ? What is the output size of this convoluted feature?
10. For a particular problem if the error is not dipping below a standard point, what are the techniques used to reduce error ? Explain the methodology in depth and with examples.