

## Summary and Highlights: Advanced CNNs in Keras

Congratulations! You have completed this module. At this point in the course, you know that:

- Using advanced techniques to develop convolutional neural networks (CNNs) using Keras can enhance deep learning models and significantly improve performance on complete tasks.
- Incorporating various data augmentation techniques using Keras can improve the performance and generalization ability of models.
- Transfer learning using pre-trained models in Keras improves training time and performance.
- Pre-trained models in Keras allow you to build high-performing models even with limited computational resources and data.
- Transfer learning involves fine tuning of pre-trained models when you do not have enough data to train a deep-learning model.
- Fine tuning pre-trained models allows you to adapt the model to a specific task, leading to even better performance.
- TensorFlow is a powerful library that enables image manipulation tasks, such as classification, data augmentations, and more advanced techniques.
- TensorFlow's high-level APIs simplify the implementation of complete image-processing tasks.
- Transpose convolution is helpful in image generation, super-resolution, and semantic segmentation applications.
- It performs the inverse convolution operation, effectively up-sampling the input image to a larger higher resolution size.
- It works by inserting zeros between elements of the input feature map and then applying the convolution operation.