ADVANCED IMAGE PROCESSING WITH CNN FUNCTIONS

Event No	AD001
Organizing Department	Artificial Intelligence and Data Science
Date	09/03/2024
Time	09:30 AM to 11:30 AM
Event Type	Guest Lecture
Event Level	Dept. Level
Venue	III Year AD Classroom
Meeting Medium	
Meeting Link	http://surl.li/renmh
Total Participants	67
Faculty - Internal	2
Students - Internal	65

Related SDG

Resource Persons

Sl	Type	Name	Designation	Company	Email	Phone
1	Resource Person	R Arun Pandian	Senior Data Engineer	Siemens Advanta (R&D;) India, Bengaluru	arunpandi@gmail.com	xxxxxxxxxx

Involved Staffs

Sl	Name	Role
1	Sudha S V	Convenor
2	Sankar Ganesh S	Coordinator

Outcome

Understand the internal functions of Convolutional Neural Network algorithm such as input layer, convolutional layer, activation function, pooling layer, fully connected layer, output layer, loss function and optimization algorithm. These components work together in a hierarchical manner, with each layer learning increasingly abstract representations of the input data (Image data), ultimately leading to accurate predictions or outputs. Training a CNN involves feeding input data through the network, computing the loss, and using backpropagation to adjust the weights iteratively until the model converges to a satisfactory solution.

Event Summary

CNN is a type of deep learning model specifically designed for processing structured grid data, such as images. They are widely used for various tasks such as image classification, object detection, segmentation, and more. It consists of **Input Layer** - It receives the raw image data as input. It consists of a grid of pixel values representing the intensity. **Convolutional Layers** - It apply convolution operations to the input image. These operations involve sliding a small filter (also known as a kernel) over the input image and computing dot products to produce feature maps. Each filter detects specific patterns or features within the input image, such as edges, textures, or shapes**Activation Function** - Typically, a non-linear activation function like ReLU (Rectified Linear Unit) is applied element-wise to each feature map after convolution.**Pooling Layers** - It downsample the feature maps obtained from convolutional layers by reducing their spatial dimensions. Common pooling operations include max pooling and average pooling, which extract the maximum or average value within a local neighborhood, respectively.**Fully Connected Layers** - It processes the flattened feature maps from the last convolutional. These layers perform a linear transformation followed by a non-linear activation function, enabling the network to learn complex relationships between features. **Output Layer** - It produces the final predictions or outputs of the network. The number of nodes in the output layer depends on the specific task. For instance, in image classification, each node may correspond to a class label, and the output represents the predicted probabilities for each class.**Loss Function** - It computes the difference between the predicted outputs and the ground truth labels or targets.**Optimization Algorithm** - It updates the weights of the network to minimize the loss function during training.

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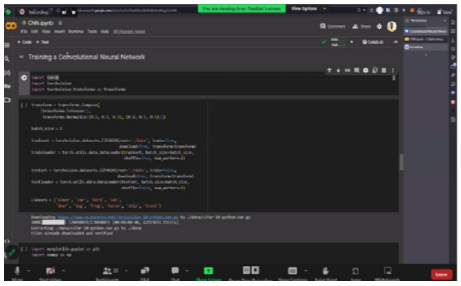

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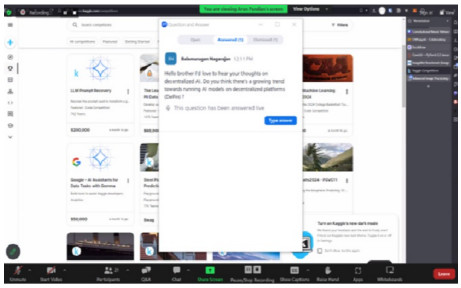

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