



EXPERT TALK SERIES ON CONVOLUTIONAL NEURAL NETWORK: TRAINING, TESTING AND EVALUATIONS

Event No	AM002
Organizing Department	Artificial Intelligence and Machine Learning
Date	23/09/2023 to 07/10/2023 (15 Days)
Time	06:00 PM to 08:00 PM
Event Type	Expert Talk
Event Level	Dept. Level
Meeting Medium	
Meeting Link	https://us06web.zoom.us/j/82118457347?pwd=H5miEAtoMDLH6je6jbOrCKeVDIqY1.1
Total Participants	13
Students - Internal	13

Related SDG



Resource Persons

Sl	Type	Name	Designation	Company	Email	Phone
1	Resource Person	Dr Mohanraj V	Senior Manager AIML Delivery	Standard Chartered GBS	mohanraj4072@gmail.com	xxxxxxxxxx

Involved Staffs

Sl	Name	Role
1	Karthikeyan S	Convenor
2	Nandhagopal S	Coordinator

Outcome

Participants will gain a strong understanding of the fundamental concepts behind CNNs, including convolutional layers, pooling, and activation functions. Participants will learn various techniques for training CNNs, including backpropagation, optimization algorithms, and weight initialization. Participants will become proficient in testing and evaluating CNN models using metrics like accuracy, precision, recall, F1 score, and ROC-AUC.

Event Summary

Understanding CNN Fundamentals: The fundamental concepts behind CNNs, including convolutional layers, pooling, and activation functions. **Training Techniques:** Learn various techniques for training CNNs, including backpropagation, optimization algorithms, and weight initialization. **Testing and Evaluation:** The proficient in testing and evaluating CNN models using metrics like accuracy, precision, recall, F1 score, and ROC-AUC. **Hyperparameter Tuning:** Understanding how to effectively tune hyperparameters, such as learning rates, batch sizes, and model architecture, to optimize CNN performance. **Data Preprocessing:** Learning about data preprocessing techniques like normalization, augmentation, and handling imbalanced datasets to improve CNN performance. **Transfer Learning:** Understanding how to leverage pre-trained CNN models for specific tasks and fine-tune them. **Handling Overfitting:** Techniques for preventing overfitting in CNNs, such as dropout, regularization, and early stopping. **Advanced Architectures:** Exploring more advanced CNN architectures like VGG, ResNet, and Inception and understanding their advantages and use cases. **Practical Implementation:** Hands-on experience with implementing CNNs using popular deep learning frameworks like TensorFlow or PyTorch. **Real-world Applications:** Demonstrating how CNNs are applied in various domains, such as computer vision, natural language processing, and healthcare. **Research Trends:** Keeping participants informed about the latest research trends and developments in the field of CNNs. **Case Studies:** Analyzing real-world case studies and projects that highlight the practical use of CNNs in solving specific problems.



KPR Institute of Engineering and Technology
(Autonomous, NAAC "A")

DEPARTMENT CSE (AIML)
Organizes
Industry Expert Talk Series
On
Convolutional Neural Networks:
Training, Testing & Evaluations
(For Honours / Minors students)



Guest Speaker
Dr. Mohanraj Venkadachalam
Senior Manager AIML Delivery Lead
Standard Chartered GBS
Chennai

CONVENOR
Dr. Karthikeyan S

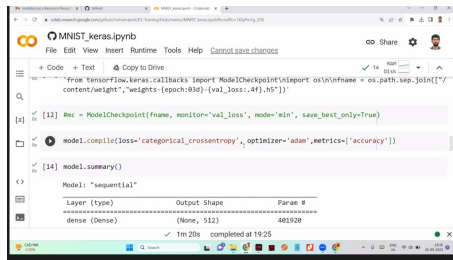
COORDINATOR
Mr. Nandhagopal S

07.00 PM - 08.00 PM (Daily)
23 Sep 2023 to 07 Oct 2023

Zoom Meeting Link
Meeting ID: <https://jqr11355exp>

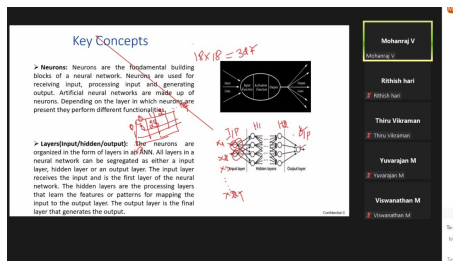
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```
from tensorflow.keras.callbacks import ModelCheckpoint\nimport os\n\nfilepath = os.path.sep.join(['', 'content/weights', 'weights_{epoch:05d}-{val_loss:.4f}.h5'])\n\n[12] #c = ModelCheckpoint(filepath, monitor='val_loss', mode='min', save_best_only=True)\n\nmodel.compile(loss='categorical_crossentropy', optimizer='adam', metrics=['accuracy'])\n\n[14] model.summary()\n\nModel: 'sequential_1'\nLayer (type) Output Shape Param #\n-----\ndense (Dense) (None, 512) 401520
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Key Concepts

- Neurons are the fundamental building blocks of a neural network. Neurons are used for receiving input, processing input and generating output. Artificial neural networks are made up of neurons. Depending on the layer in which neurons are present they perform different functions.
- Layers (Input/Hidden/Output) Neurons are organized in the form of layers in an ANN. All layers in a neural network can be segregated as either an input layer, hidden layer or an output layer. The input layer receives the input and is the first layer of the neural network. The hidden layers are the processing layers that learn the features or patterns for mapping the input to the output layer. The output layer is the final layer that generates the output.

Handwritten notes: $18 \times 18 = 324$, $3 \times 16 = 48$, $16 \times 16 = 256$, $7 \times 8 = 56$

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