

SNS COLLEGE OF ENGINEERING Kurumbapalayam (Po), Coimbatore – 641 107 AN AUTONOMOUS INSTITUTION Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai UNIT 4 PUZZLES



1. Optimization in Deep Learning

I am the process of minimizing the loss function to improve a neural network's performance. Gradient Descent and Adam are common methods used for me. What am I?

- A) Regularization
- B) Optimization
- C) Overfitting
- D) Feature Engineering
- Answer: B) Optimization

2. Non-Convex Optimization for Deep Networks

Unlike simple convex functions, I have multiple local minima and saddle points, making deep learning models difficult to optimize. Advanced techniques like momentum and adaptive learning rates help navigate me. What am I?

A) Convex Optimization

- B) Non-Convex Optimization
- C) Bayesian Optimization
- D) Evolutionary Algorithms
- Answer: B) Non-Convex Optimization

3. Stochastic Optimization

I improve optimization by updating model parameters using small random batches instead of the entire dataset, making training faster and scalable. What method am I?

A) Batch Gradient Descent

- B) Stochastic Optimization
- C) Full Gradient Descent

D) Genetic Algorithm

Answer: B) Stochastic Optimization

4. Generalization in Neural Networks

I ensure that a deep learning model performs well on unseen data, preventing overfitting and improving real-world accuracy. Techniques like dropout and regularization help improve me. What am I?

A) Generalization

- B) Overfitting
- C) Underfitting
- D) Memorization
- Answer: A) Generalization

5. Spatial Transformer Networks

I allow neural networks to manipulate images by applying transformations like rotation, scaling, and warping, making them more invariant to distortions. What am I?
A) CNNs

- B) Spatial Transformer Networks
- C) Recurrent Neural Networks
- D) Variational Autoencoders
- V Answer: B) Spatial Transformer Networks

6. Recurrent Networks & LSTM

 \mathbb{Z} I am a type of neural network designed to handle sequential data. Unlike traditional networks, I use loops to retain past information. My advanced version, LSTM, overcomes vanishing gradient problems. What type of network am I?

- A) Convolutional Neural Networks
- B) Recurrent Neural Networks
- C) Feedforward Neural Networks
- D) Graph Neural Networks
- 🔽 Answer: B) Recurrent Neural Networks

7. Recurrent Neural Network Language Models

I generate text by predicting the next word in a sequence based on previous words. I am widely used in chatbots and text generation. What model am I?

- A) Transformer Model
- B) Convolutional Neural Network
- C) Recurrent Neural Network Language Model
- D) Autoencoder
- Answer: C) Recurrent Neural Network Language Model

8. Word-Level RNNs & Deep Reinforcement Learning

I combine recurrent networks with reinforcement learning to improve long-term decision-making in tasks like text generation and game-playing. What technique am I? A) Word2Vec

- B) Word-Level RNNs & Deep Reinforcement Learning
- C) Supervised Learning
- D) Random Forests
- 🔽 Answer: B) Word-Level RNNs & Deep Reinforcement Learning

9. Computational & Artificial Neuroscience

I bridge the gap between neuroscience and AI by modeling how the brain processes information. My insights have influenced deep learning architectures like CNNs and RNNs. What field am I?

- A) Computational & Artificial Neuroscience
- B) Cognitive Psychology
- C) Data Science
- D) Theoretical Physics
- Answer: A) Computational & Artificial Neuroscience