Quiz 8

Score: 14/15

1. **What does NLP stand for?**

- Natural Language Programming
- Neural Language Processing
- Natural Language Processing ✓
- Neuro-Linguistic Programming

Explanation

NLP stands for Natural Language Processing, which is a branch of artificial intelligence that focuses on the interaction between computers and humans through natural language.

2. **Which activation function is commonly used in the output layer of a binary classification neural network?**

- Sigmoid ✓
- ReLU
- Tanh
- Softmax

Explanation

The sigmoid activation function is commonly used in the output layer of a binary classification neural network to squash the network's output to the range [0, 1] for predicting probabilities.

3. **What is the loss function commonly used in language modeling tasks?**

- Mean Squared Error (MSE)
- Cross Entropy ✓
- Mean Absolute Error (MAE)
- Binary Cross Entropy

Explanation

The Cross Entropy loss function is commonly used in language modeling tasks as it measures the difference between two probability distributions, which makes it suitable for language generation and prediction tasks.

4. **In NLP, what is the process of transforming text into a series of words or phrases called?**

Stemming

Lemmatization

Tokenization

Embedding

Explanation

Tokenization is the process of breaking down text into words, phrases, symbols, or other meaningful elements, which is a fundamental step in processing textual data in NLP.

5. Which of the following is NOT a popular word embedding technique used in NLP?

Word2Vec

GloVe

Doc2Vec

Bag-of-Words (BoW)

Explanation

Bag-of-Words (BoW) is not a word embedding technique; it's a simple feature extraction method that counts the occurrence of words within a document.

6. What type of neural network is commonly used for language translation tasks?

Feedforward Neural Network

Convolutional Neural Network

Long Short-Term Memory (LSTM)

Recurrent Neural Network (RNN)

Explanation

Recurrent Neural Networks (RNNs) are commonly used for language translation tasks due to their ability to handle sequential data and variable-length inputs, making them suitable for processing sentences and language sequences.

7. Which deep learning technique is used for generating human-like text based on a large corpus of data?

Autoencoders

Reinforcement Learning

Generative Adversarial Networks (GANs)

Variational Autoencoders (VAEs)

Explanation

Generative Adversarial Networks (GANs) are commonly used for generating human-like text based on a large corpus of data by learning the patterns and structures in the input data to generate new samples.

8. Which technique is used to handle the issue of vanishing gradients in training deep neural networks?

Batch Normalization

Explanation

Dropout

Residual Connections

Gradient Clipping

The technique of using skip connections, such as in Residual Networks (ResNets), helps to address the vanishing gradients problem by enabling the flow of gradients across multiple layers, allowing for easier training of very deep networks.

9. Which technique is used to pre-train a language model on a large corpus of unlabeled text data?

Transfer Learning

Fine-tuning

Language Model Pre-training (LMPT)

Unsupervised Learning

Explanation

The technique of pre-training a language model on a large corpus of unlabeled text data using self-supervised learning methods, such as Masked Language Modeling, is known as Language Model Pre-training (LMPT) or pre-training.

10. Which measure is commonly used to evaluate the performance of a machine translation system?

F1 Score

Perplexity

BLEU Score

Mean Average Precision (MAP)

Explanation

BLEU (Bilingual Evaluation Understudy) is a commonly used metric to evaluate the performance of a machine translation system by comparing the generated translation with one or more reference translations.

11. Which step involves using a language model to generate new text based on the learned patterns and structure of the training data?

Encoding

Decoding

Synthesizing

Generation

Explanation

The generation step involves using a language model to generate new text based on the learned patterns and structure of the training data, which is a key application of language modeling in natural language processing tasks.

12. Which architecture introduced the concept of attention mechanism in deep learning?

RNN

Explanation

CNN

LSTM

Transformer

The Transformer architecture introduced the concept of attention mechanism in deep learning, which allows the model to focus on different parts of the input sequence when making predictions, leading to significant improvements in tasks like language translation and language understanding.

13. Which technique is used to convert words or phrases into numerical representations in NLP?

One-Hot Encoding

Bag-of-Words (BoW)

Word Embeddings

TF-IDF

Explanation

Word embeddings are used to convert words or phrases into numerical representations in NLP by representing words as dense vectors in a high-dimensional space, capturing semantic and syntactic relationships between words.

14. In NLP, what process involves reducing words to their base or root form?

Stemming

Lemmatization

Tokenization

Normalizing

Explanation

Lemmatization is the process in NLP that involves reducing words to their base or root form, considering the context of the word. It often involves dictionary look-up and morphological analysis.

15. What type of neural network is typically used for named entity recognition in NLP?

Convolutional Neural Network

Recurrent Neural Network (RNN)

Long Short-Term Memory (LSTM)

Bidirectional Long Short-Term Memory (BiLSTM)

Explanation

Bidirectional Long Short-Term Memory (BiLSTM) networks are commonly used for named entity recognition in NLP due to their ability to capture contextual information from both past and future tokens, making them suitable for sequence labeling tasks.