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2.

1) Similarity: both are types of neural networks used in deep learning, they can learn patterns and representations from data.

Difference: 1° CNN use convolutional layers to extract local patterns on input data (mostly grid data) while RNN have recurrent connections to memorize features, leverage dependencies in sequential data.

2° CNN handles input data parallelly, while RNN does sequential data processing.

2). solutions: 1° gradient clipping

2° change model to LSTM or GRU.

3.

2) Sequence-to-sequence pattern is used, because a sequence (sin function sequence with noise) is input, another sequence (denoised sine function) is outputted.

input → (batch size, sequence length, input size).

First LSTM → (batch size, sequence length, hidden size).

Second LSTM → (batch size, sequence length, hidden size).

Linear layer → output (batch size, sequence length, 1).