

Ex12 - Deep Learning Questions - NLP

1. Suggest a few methods for augmenting textual data.
2. Explain the main differences between an encoder-decoder architecture and attention.
3. Explain the concept of Knowledge Distillation.
4. Attention is known to have an $O(n^2)$ dependence on the length of the input. Explain why.
5. Try to suggest a novel architecture that merges ideas from dilated convolutions into a transformer with attention. Explain why, if at all, this can be useful.
6. You have a model that detects spam in English emails with good precision and recall. You are asked to build a similar spam detector for emails written in German, but you don't have any labels for emails in German. You do have access to a large corpus of emails in German and English (no translation - different emails).
7. You are asked to build a neural network that composes simple music melodies (with at most a single note playing at each point). Describe your chosen architecture, the data you will use, loss function etc.
8. You are asked to build a model that sets diacritization symbols (סימני ניקוד) in Hebrew texts. Explain your approach - the data you will try to get, the network architecture, how you would evaluate the model, pitfalls you expect along the way, and any important note you'd like to add.
9. You are given a corpus of 10,000 transcriptions of recorded conversations between customers and support people in a contact center of a large internet provider. You are asked to detect the main questions customers ask. Describe your approach, including data cleaning, model architecture, evaluation metric etc.